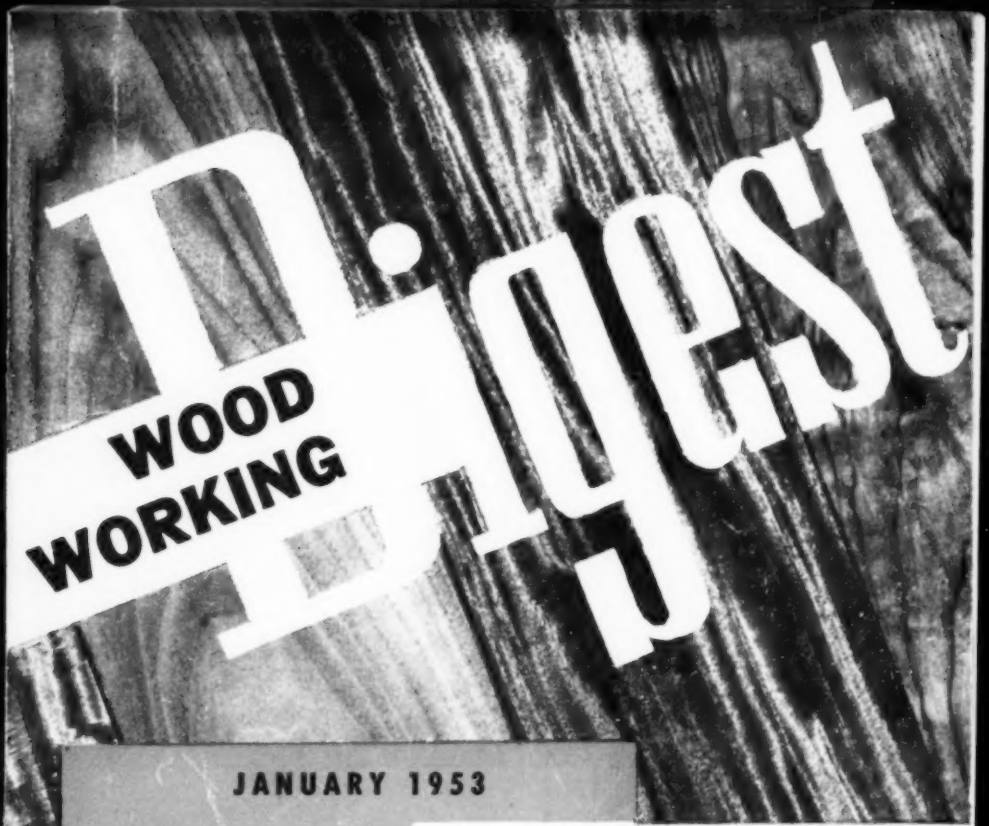

WOOD WORKING Digest

JANUARY 1953

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A HITCHCOCK PUBLICATION

Acceptance under Section 34.64, P.L.&R., authorized

WOOD WORKING DIGEST

222 Willow Ave. Wheaton, Ill.

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NEW SPOTNAILS

Halt Rising Production Costs

Light, Portable Spotnailer drives nail-like wire fasteners with one blow of rubber mallet. 88 Unique sizes and types of Spotnails and Spotpins from 3/16" to 1-1/8" offer a variety of fasteners to fit practically any nailing requirement.

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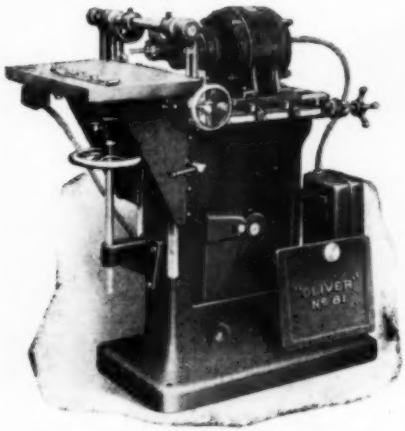
EVANSTON 1, ILLINOIS

"Oliver" Horizontal Borers

can increase your production up to 50%

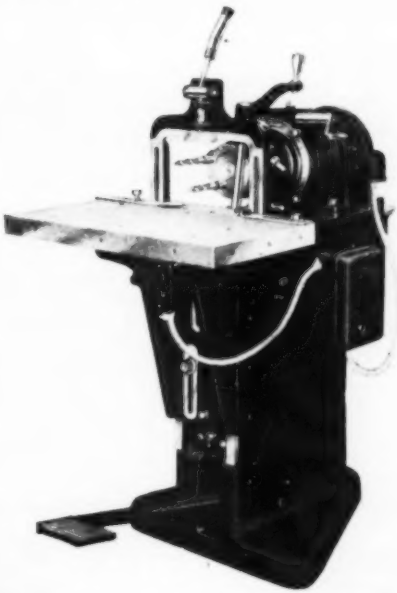


"OLIVER" No. 82-D TWO-SPINDLE BORER

The low-cost "Oliver" No. 82-D Borer shown below bores two holes at either horizontal or vertical alignment, or at any angle between. Range of centers ⅞" to 3½". Finely graduated head accurately adjusted by hand crank. Hand or foot feed (both, if desired). Has hand clamp for holding work up to 7" thick. *Ask for Bulletin 82-D.*

"OLIVER" No. 81-D CLOSE CENTER BORER

One woodworker reports this Borer (shown above) reduced set-up time 40%, increased production 50%. Using one head it bores two holes, ⅛" to 3½" centers, holes up to ¾" diameter, in any position. With extra heads it bores 4 to 6 holes a considerable distance apart. Single bit bores holes 2" diameter. Has automatic hold down clamp and feed—11, 17 and 22 strokes a minute. *Write for Bulletin No. 81-D.*



OLIVER

OLIVER MACHINERY COMPANY

Established 1890 **GRAND RAPIDS 2, MICHIGAN**

Your Rabbets Learn Good Habits

from this wonderful
WIZARD with **WOOD**

. . . that's why your reputation is safeguarded by using

WELDWOOD®
PLASTIC RESIN GLUE

Loose joints can injure any craftsman's reputation. Why not insure YOURS . . . by always using Weldwood Plastic Resin Glue.

Woodworkers say that Weldwood Glue is really a wizard, the way it grips and holds rabbets, keystones and all other tough joints . . . actually makes a bond that's stronger than the wood itself, a bond that's stain-free, water-resistant, rot-proof, bacteria-proof.

Weldwood Glue is a single powder glue. Mixes quickly with water and requires only a few hours of pressure. Takes a little extra time to begin with, but saves you time in the long run because there are no delayed failures . . . its strength actually increases with age!

In 10 and 25 lb. cans, in 100 lb. and 300 lb. drums. At any of our convenient warehouses coast to coast, or from your mill supply dealer or industrial distributor.

HAVE YOU TRIED THESE FINISHING WIZARDS

To insure a satisfactorily painted or finished job on fir plywood or other soft woods, use . . **FIRZITE**®

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To bring out and preserve the natural grain and beauty of any wood, use . . . . . **SATINLAC**®

UNITED STATES PLYWOOD CORPORATION
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☐ Please send me a sample of Weldwood Glue.

☐ Please send me name of nearest distributor.

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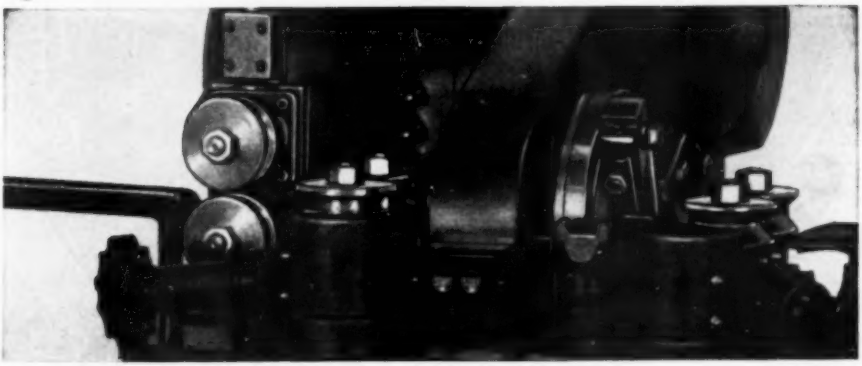
FIRM_____

ADDRESS_____

feed in SCRAP



feed out PROFIT

Convert your scrap trimmings and edgings to profitable wood turnings with a Hawker Rod and Dowel machine: the only dowel machine with self-centering horizontally mounted infeed rolls that produce uniform rounds from rough sorted scrap. Hawker's new auxiliary vertical outfeed rolls greatly reduce chattering, twisting or breaking within the cutterhead and eliminate malformed dowels. Hawker's new quick adjusting, All Steel Cutterhead gives uniformly good surface finish — holds o.d. to close tolerances — produces rounds at high feed speeds hour after hour. Matched sets of Hawker quality steel knives are precision ground on all surfaces to assure better finish and two to three times more production between grindings. Write for new catalog.

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BEACH
No. 9 Precision Sander
for PLASTICS METALS WOOD

A precision built machine for finishing plastics, metals or wood to extremely close tolerances. Speeds production and assures uniformly finished surface over entire sheet. Will feed material from 1/32 inch to 6 inches. Available in several sizes, ranging from 24 inches to 54 inches.

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Wood Working digest

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DISTRICT MANAGERS

New England and Eastern N. Y. State: Dan E. Reardon, Box No. 1, South Glastonbury, Conn. Telephone: Glastonbury 3-2400

New York, Metropolitan Area: Alvin E. Walles, c/o Hitchcock Pub. Co.; 55 W. 42nd St., New York 36, N. Y. Telephone: Lackawana 4-4528

Pennsylvania and South Atlantic States: Raymond J. Sietsema, c/o Hitchcock Pub. Co., 55 W. 42nd St., New York 36, N. Y. Telephone: Lackawana 4-4528

Rock Mountain States: Otto Highfield, Evergreen, Colo. Telephone: Evergreen 071R3

Oregon and Washington: Lloyd Thorpe, Lloyd Thorp & Associates, 209 Seneca Street, Seattle 1, Washington. Telephone: Elliott 5919

Western N. Y. State, Western Penna.: Ralph E. Helfrick, 1507 Edgefield Rd., Cleveland 24, Ohio. Telephone: Hillcrest 2-0189

Ohio, Eastern Michigan, Indiana, Kentucky: Henry J. Smith, 3529 Radcliffe Road, Cleveland 21, Ohio. Telephone: ERieview 1-05550

Middle West, Western Michigan: James C. Stewart, 222 E. Willow Ave., Wheaton, Ill. Telephone: WHeaton 8-3400

Arkansas, Oklahoma, Texas, Missouri, Memphis, Tennessee: Ned Bailey, 11 Howell Avenue, Eureka Springs, Arkansas. Telephone: Eureka Springs 6751

California and Arizona: Keith H. Evans, 3757 Willshire Blvd., Los Angeles 5, Calif. Telephone: Dunkirk 8-2981
Keith H. Evans, Room 304, 593 Market Street, San rancisco 5, Calif. Telephone: YUkon 2-4280

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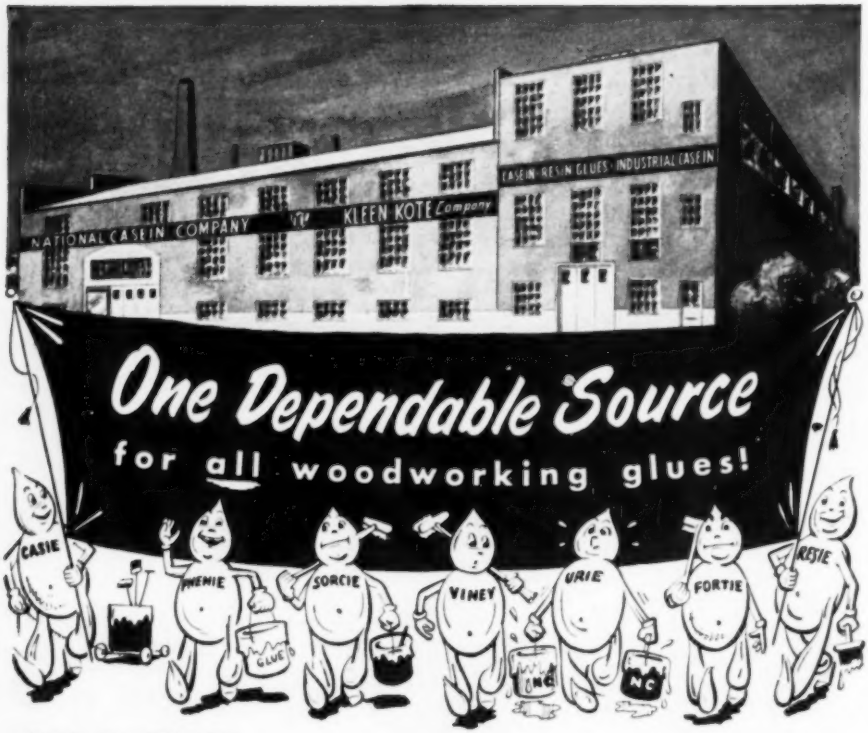


Here's the Right Glue for These Important Glue Jobs:

- ★ For exterior plywood, National's P-100 Phenol glue.
- ★ For interior plywoods, ₴750, ₴600 liquid urea or DR powdered resin.
- ★ For machine edge gluing, ₴750 liquid resin, with selected catalyst. Hand work: a wide variety of casein glues or DR powdered resin glue. Also National's ₴5000 for fast setting.
- ★ For decorative plastics: ₴8846, ₴9, or ₴30 casein glues. Also DR powdered resin glues.
- ★ For chipboard manufacture, ₴750 and ₴600 liquid resin; P-100 phenol glue.
- ★ For glues to pass all government specifications . . . for laminating hard boards, veneer splicing, laminated rafters, etc., contact office nearest you.

ASK your NATIONAL CASEIN man about Casie's and Resie's brothers and sisters — "Phenie" — that's phenol glues for exterior plywood; "Sorcie" — our resorcinol glue for waterproof weatherproof bonds at room temperatures; "Viney," a vinyl formula for assembly work; "Urie" — urea glue for furniture and cabinet work; and "Fortie" — a dependable glue for gap filling.

If you aren't satisfied with the performance of adhesives you're now using, tell us about your glue job and we'll recommend a glue to do it — RIGHT!

National Casein

601 W. 80th St., Chicago 20, Ill. Broad and Fulton Sts., Riverton, N. J.

INDIVIDUAL Clamps

RETAINING CLAMP

Black's Superdreadnaught is a superior Retaining Clamp with drop forged head and turnbuckles. It has a tremendous margin of reserve strength without excessive weight or bulk, and is true to pattern, and uniform in all dimensions.
Write for Bulletin 11-F.

DRAW SCREW CLAMP

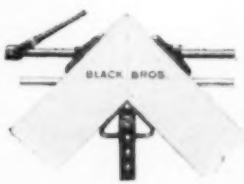
Black's powerful draw screw clamps which are regular equipment on Black clamp carriers are also available individually. They perform heavy gluing operations beyond the range of ordinary bar clamps.
Write for Bulletin 11-B, Part 5.

No. 30 STEEL BAR CLAMPS

Black's No. 30 Bar Clamp is a general purpose clamp suitable for all sorts of wide gluing up to 2" in thickness. The Bar is of crucible alloy spring steel, and the castings are of refined malleable iron.
Write for Bulletin 11-B, Part 1.

No. 80 PILING CLAMP

Black's No. 80 Piling Clamp combines the piling idea with the versatility of the individual clamp. It is a double clamp with two screws running the full length, to which two sets of jaws are attached, one on each side of the frame. Available in regular and heavy capacities.
Write for Bulletin 11-B, Part 6.



MITER CLAMP

Black's Miter Clamp applies pressure by grasping the miter between a steel triangle and two mitered jaws, at right angles to the surfaces to be joined. Handle and screws are made of stiff high carbon steel.
Write for Bulletin 11-B, Part 3.

"If it's gluing equipment — we have it"

Write for details today!

THE BLACK BROTHERS CO., INC. **810 9th ST., MENDOTA, ILLINOIS**

the PERKINS GLUE LINE

PERKINS GLUE COMPANY — Lansdale, Pa. * Kitchener, Ont. * High Point, N. C. * Shawano, Wis.

Fast-Setting Corox Gives Strong Bond In Joint Gluing

Users of Perkins Corox liquid ready-for-use glue report that excellent joints are obtained even after short clamping periods. This excellent prepared form of vegetable glue has received wood fabricator's stamp of approval for a wide variety of gluing applications.

Assembly gluing is the primary place for use of Corox, but large quantities of this glue are also used in edge bonding of corestock. Cores

bonded with Corox may later be hot

in edge bonding of corestock. Cores

Perkins Corox liquid ready-for-use vegetable glue is excellent for edge gluing stock to be pressed in a clamp carrier as shown above. Samples of Corox are available to woodworkers.

Single Source For All Types of Glue

A single source for all wood adhesive requirements?

Glue-users — large and small — benefit tremendously when they can obtain all their glue room requirements from a single reliable source. Ordering is simpler, better service is made possible, transportation costs are reduced and other obvious benefits accrue to the glue user when a single source of supply is maintained.

Perkins Glue Company is the only major glue supplier offering the full range of resins, caseins, vegetable and prepared hide glues. This assures an unbiased approach on the company's part in offering you the right glue for a particular job and makes it possible for you to get as many different adhesives as you may need from one source.

The Glue Line

The regular editions of "Perkins Glue Line", external house organ of Perkins Glue Co., have not appeared in recent months for reasons beyond our control.

The publication will appear again in the near future as a quarterly and the several thousand readers on our mailing list will receive each edition.

Glue Powder Storage

Powdered resin or casein glues should never be stored directly on a concrete floor. Moisture from the concrete will considerably shorten the storage life of the resin or casein.

If the storage room floor is concrete, place boards underneath the drums as a precaution.

bonded with Corox may later be hot pressed in panel manufacture without a softening of the glue line.

While longer pressure periods are advisable where possible users of Perkins Corox have reported excellent joints after clamping times of as little as ten minutes.

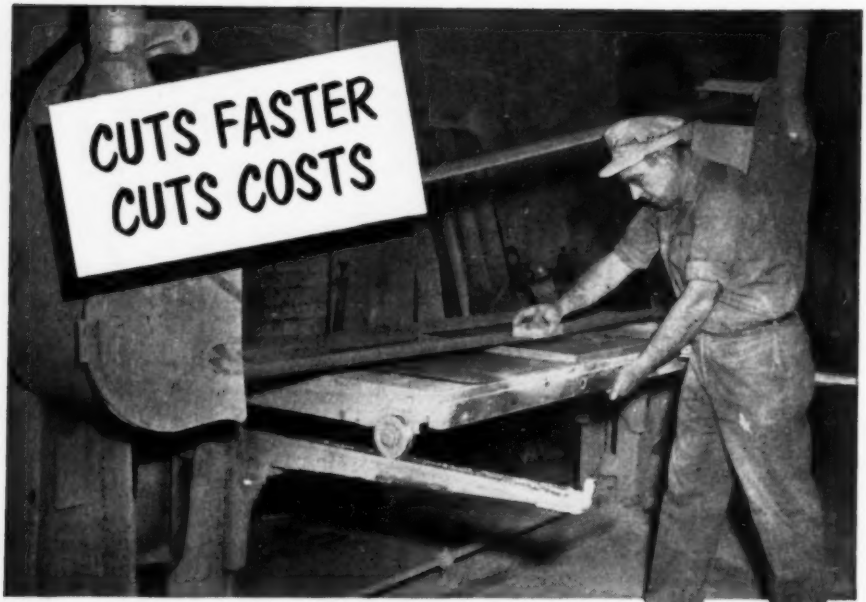
In addition to fast set, Perkins Corox offers an unapproached advantage over other ready-for-use adhesives in that Corox joints get stronger with age rather than weaker as is the case with many other liquid adhesives offering a quick bond.

Perkins Corox—due to the elimination of mixing, heating, and other laborious and costly operations — is considered to be one of the most efficient glues ever offered furniture manufacturers.

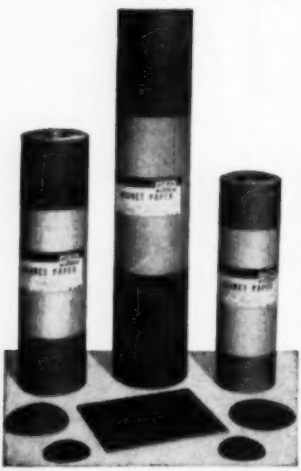
Full information and test samples may be obtained from Perkins Glue Company, Lansdale, Penna.

Founded in 1899

Perkins Glue Company is one of the oldest firms serving furniture and plywood manufacturers. The Company was founded in 1899.



"On the JOB" tests show savings over premium priced abrasives...



...with MID-WEST RESIN SEAL GARNET

Customers tell us that "on the job" tests have proven Mid-West Resin Seal Garnet to be superior to other coated abrasives costing much more. That is why we urge you to make a test run with Mid-West and compare it with the brand you are now using.

Designed specifically for the woodworking industry, Mid-West Resin Seal Garnet material is made with medium or heavy weight paper and all cloth backings, and flexibilities in belts, sheets, rolls or discs . . . or in any other standard form.

Why not let us show you how we can cut costs on your sanding operations? There is a Mid-West field representative ready to serve you. Write us for his name.

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EXECUTIVE OFFICES:
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MID-WEST QUALITY ABRASIVES

Plants in Owosso, Michigan and Rochester, Pennsylvania

High production veneer slicing at the Lawrenceburg, Ind. plant of the Pierson-Hallowell Co.

it's...

OK

let'er go!

and watch

OK VENEER KNIVES

make the toughest jobs look easy

The country's largest mills are getting high production at a low cost with custom built OK Veneer Knives. Here's why: Down-time is virtually eliminated because OK Knives keep their keen edges longer . . . stand up under knots without nicking or breaking. Weld failures are unheard of.

OK Knives are made to your specifications. Thicknesses are held to tolerances and parallelism of ± .001. Made of finest alloy steel. OK Veneer Knives—used by more mills than any other knife made.

Manufacturers of
PLANER KNIVES • VENEER KNIVES
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GO WITH OHIO GREEN

THE OHIO KNIFE CO.

CINCINNATI 23, OHIO

Step on it for more production

PORTER 43-20J Automatic Hydracut Saw

FOOT PEDAL CONTROL ENDS OPERATOR FATIGUE

Increase lumber production in your plant with these Hydracut Saw set-ups.

1.

Standard Set-up. Hydracut Saw and tables.

2.

Hydracut Saw in single line conveyorized rough mill set-up.

3.

Hydracut Saws in double line conveyorized rough mill set-up.

The Porter 43-20J Automatic Hydracut Saw saves hours of labor . . . enables any cutting room operator, regardless of age, to cut more lumber per day by eliminating tiring hand operation. Operator simply positions the lumber against the adjustable cut-off stops . . . and presses the electrically operated foot control. The saw blade, mounted on a hydraulically operated carriage, *automatically* moves forward to make the cut and *automatically* returns. Fatigue from manual "push-pull" operation is gone.

Stroke length is quickly adjusted by a convenient lever. Cutting speeds range from 0 to 45 cuts per minute.

The new Porter Bulletin 43-20J-1 fully explains the Automatic Hydracut Saw. *Send for your copy today.*

C. O. PORTER Machinery Co.
668 Front Ave., N.W., Grand Rapids 4, Mich.

Another Enthusiastic User!

One of two Whitney Automatic Shapers at Lloyd Mfg. Co., shaping chair seats all around and handling many other operations jobs.

THE Lloyd MANUFACTURING COMPANY
MENOMINEE - MICHIGAN
Furniture of Quality since 1903

November 10, 1952

Baxter D. Whitney & Son, Inc.
Winchendon
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Gentlemen:

Our Whitney Automatic Shapers have been in continuous service since they were installed several years ago. They turn out large quantities of uniform, smooth work and require a minimum of attention.

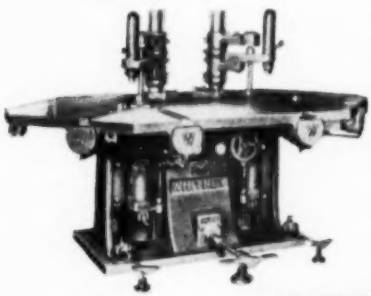
What we like about the Whitney Automatic is the quick, easy set-ups and practically no loss of time during changeovers. We keep them tooled up for many different jobs at all times. They are safe operating and our operators like them. We are more than pleased with their all-around performance.

Very truly yours,
THE LLOYD MANUFACTURING COMPANY
By Lyle Fahrenbach
Supt. of Production

LF/lp

Cut your shaping costs with WHITNEY automatic SHAPERS

Whitney 2-spindle Automatic
Whitney Automatic Shapers are built in sizes and models for every shaping requirement.



Lloyd Manufacturing Co., Menominee, Mich., makers of quality furniture and the nationally advertised "Rock-A-Feller" Chair, join with hundreds of manufacturers in their praise of the large output and the high quality of work produced on Whitney Automatic Shapers. Their letter tells the story.

Whitney Automatics are designed to handle tough production schedules on long or short runs and to produce smooth, uniform work. Precision-built spindles and accurate, solid construction assure accurate work, low operating and maintenance costs and years of trouble-free service.

For your important shaping jobs investigate Whitney Automatic Shapers. Write us or ask your Whitney representative for complete information. Ask for Shaper Bulletin D1

BAXTER D. WHITNEY & SON, Inc.
WINCHENDON, MASSACHUSETTS, U.S.A.

WHITNEY

Our 116th Year

Slash operating costs with

DELTA CAPACITY—These are big-capacity planers; handle anything—from heavy, oversize lengths down to short ends, and from capacity thickness to veneer dimensions.

DELTA ACCURACY—Strong rigid construction provides essential support; Delta high-speed, 4-knife cutter heads, precision ground and perfectly balanced, produce "finish" cuts—making sanding operations unnecessary.

DELTA DURABILITY—Built to last for years! Fine, sturdy grey iron castings give maximum rigidity. Shielded, sealed, lubricated-for-life ball bearings guarantee smooth cutterhead action, trouble-free performance and long-lived usefulness.

DELTA EASE OF OPERATION—Easily operated adjustments for quick, accurate setting of knives. Table surface is always parallel to blades. Controls are properly located, in instant easy reach.

DELTA SAFETY—Safest planers built. All moving parts are fully enclosed or guarded. Blades can never strike the table. Safety-type chip breaker. Safety clutch permits starting and stopping feed mechanism instantly, without touching the motor switch. No kick-back.

DELTA MILWAUKEE

DELTA QUALITY MAKES THE DIFFERENCE

Delta 24" x 8" Planer
Heavy duty planer for top-quality, high speed production at low cost.

these economy-minded

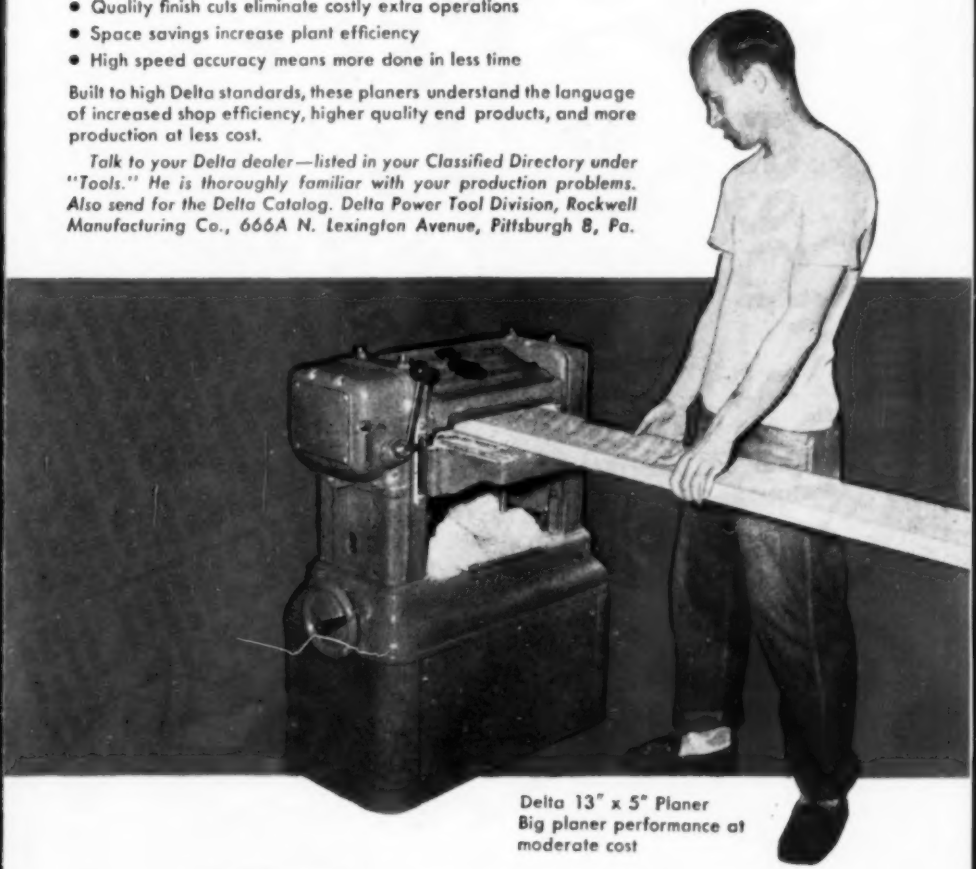
DELTA PLANERS

Speed production, boost profits with this 4-Point Delta Planer Plan.

- Convert rough lumber; salvage scrap, cut waste
- Quality finish cuts eliminate costly extra operations
- Space savings increase plant efficiency
- High speed accuracy means more done in less time

Built to high Delta standards, these planers understand the language of increased shop efficiency, higher quality end products, and more production at less cost.

Talk to your Delta dealer—listed in your Classified Directory under "Tools." He is thoroughly familiar with your production problems. Also send for the Delta Catalog. Delta Power Tool Division, Rockwell Manufacturing Co., 666A N. Lexington Avenue, Pittsburgh 8, Pa.



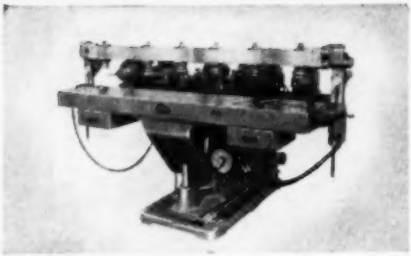
Delta 13" x 5" Planer
Big planer performance at moderate cost

DELTA QUALITY POWER TOOLS

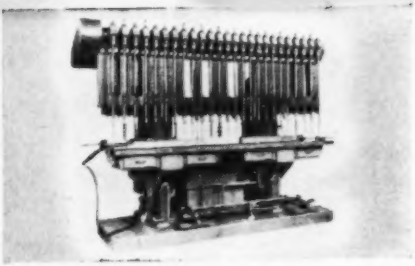
Another Product by **Rockwell**

The Best "Tip" of the Year!
YATES-AMERICAN NOW MAKING CARBIDE SAWS
Yates-American Machine Company has announced its acquisition and transfer to Beloit, Wisconsin of the manufacturing facilities of Big Four Carbide Tool Company, a Cincinnati manufacturer of "Big Four" carbide tipped saws and other carbide tipped cutting equipment. With this new addition Yates-American will be in a position to supply a complete line of cutting equipment for all woodworking needs.
The carbide tipped saw which has wide acceptance in the woodworking industry during recent years, has held its position over conventional saws both as to the extremely
NEW
Big Four

SAW BL
TYPICA
Diameter
12"
14"
16"
Storm Halts Effort
Freighter Yor
Yates-American
BELOIT, WISCONSIN
BRANCH OFFICES: CHICAGO, ILLINOIS; HIGH POINT, NORTH CAROLINA; MEMPHIS, TENNESSEE; PORTLAND, OREGON
Ask your local dealer—if he is unable to supply you, contact us directly.
Big Four
"BIG FOUR" CARBIDE TOOLS
Big 4 produces saw blades for every purpose, from school room manual training to large industrial projects.
"Big Four" Carbide Tools are guaranteed against imperfection in quality of materials and workmanship.



STYLE D-200

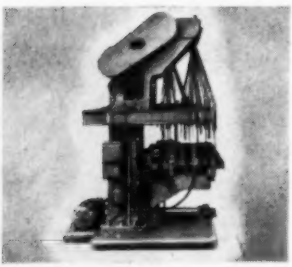


STYLE CCH

ROOT Boring Machinery

A Few of our 33 Different Wood Boring Machines . . .

STYLE G-250



STYLE CXH

STYLE D-150

ROOT machines are used for all types of single and multiple spindle boring. A few representative models from our extensive line are shown above. If you do not see a machine for your needs, write for our catalog.

Style CCH is a large multiple spindle hydraulic feed machine for boring as many as 44 holes at one time in stock 12 feet long. A labor-saving machine for makers of agricultural implements, ladders, and other work requiring long stock.

Style D-200 is a highly developed machine for diversified boring found in furniture factories. Hydraulic spindle feed, geared-head individually motorized spindles, and automatic adjustable work clamps are a few of the features found on this widely used machine.

Style CXH is a flexible machine with universally adjustable spindles and stepless hydraulic feed. It has a 22" crossfine spindle adjustment and a 4 to 6-foot boring length. Holes in a straight line or irregularly spaced patterns can be bored productively with a high degree of accuracy.

Style D-150 Radial Borer is a foot and hand-feed machine with more capacity than existing two spindle machines. Twenty-four-inch spindle-spread geared-head motorized spindles that are fully adjustable are a few of the many features of this borer. A perfect machine for the shop that does not need automatic power-feed machine equipment.

Style G-250 Boring and Mortising Machine is a foot feed machine of the general utility type. Powerful 3 h.p. 2 speed motor for large hole boring and mortising. Other features include table with universal tilt, two leverage points for light and heavy boring, totally enclosed motor, chip blower, spindle in head construction. Mortising chisel interchangeable with boring chuck. Many other features described in free bulletin on this machine.

SEND FOR THIS FREE CATALOG

Get the complete data on the complete Root line of Boring Machines and Lumber Hoists from our new catalog. Write today on your company letterhead for your copy of Catalog 173-A.

B.M. ROOT CO.
YORK, PENNSYLVANIA

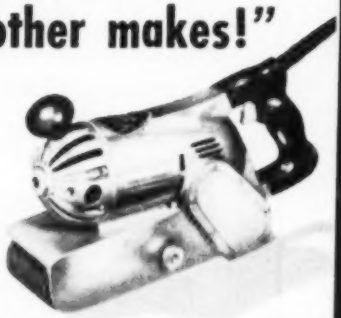
Headquarters for Boring Machinery and Lumber Hoists for 41 years

"With nine years constant use our SKIL Sanders beat all other makes!"

—says **Frank Bauer,** shop foreman
WASHINGTON MILLWORK COMPANY
Spokane, Washington

"Finishing millwork for 10 houses every day overworks our seven SKIL Belt Sanders," says Mr. Bauer, "but even with this punishment they beat all other makes in performance. We now use *SKIL* Sanders exclusively."

"They are easier to handle," he continues, "better balanced because the weight is centered low in the machine, and give better finishes because you get the 'feel' of the SKIL Belt Sander when it's in use. What's more, you can't beat the low maintenance of these fine tools!"



SKIL Belt Sander—Model 448—3-inch belt travels at 1200 feet per minute . . . makes fast work of finishing anything from wood to stainless steel. Has instant belt centering—automatic tensioning. One of five models.

"You can see the cut with a SKIL Saw," says E.B. Wiggins, "and that's all-important for speed and accuracy." Here he uses the Washington Millwork Company's Model 77 SKIL Saw.

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NEWTON

OSCILLATING UNIVERSAL EDGE SANDER

—AVAILABLE IN TWO SIZES—

MODEL E-30 SHOWN

NEWTON EDGE SANDERS will produce better surfaces and cut costs on many sanding operations. The Model E-30 above carries an 8"x77" abrasive belt with a Platen 8½"x30" on each of the two sides. Platens are of cast iron machined perfectly flat. They can be used as hard platens, or with cushioned frictionless covers. The work table is extra large - 22"x52", the back half of which tilts for angle sanding. Table is of cast iron with ground and polished surface. The entire workhead oscillates and is powered by a direct-drive 3 H.P. TOTALLY ENCLOSED motor.

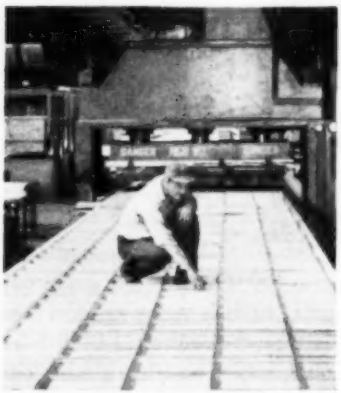
Also available in a smaller model having a 6½"x18" Platen.

WRITE FOR DESCRIPTIVE BULLETINS

NEWTON MANUFACTURING CO. **TEMPLE, TEXAS**

FURNITURE . . . Output per manhour more than doubled in this furniture plant with installation of THERMEX Electronic Bonding Equipment for bonding cleats on TV sets. In addition, quality has been improved and valuable floor space made available.

Thermex
ELECTRONIC BONDING EQUIPMENT



FREIGHT CARS . . Assembly for top of new all-plywood freight car is moved into high-frequency press, five feet at a time, where THERMEX Electronic Bonding Equipment bonds the joints. Top panels, which have 3/8" and 5/8" plywood skins, have been bonded in as little time as 3 minutes per joint!

Cuts bonding time!

PROFIT from the experience of these users of THERMEX® Electronic Bonding Equipment! Speed up production and reduce labor requirements. A Thermex field engineer will gladly study your operations and make recommendations . . . at no obligation. Write The Girdler Corporation, Thermex Division, Louisville 1, Kentucky.

Choose Thermex Bonding Equipment for:

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The **GIRDLER** Corporation

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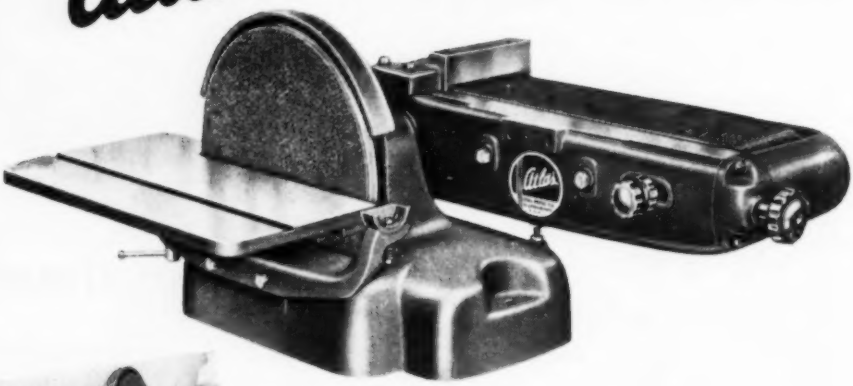
VERSATILE PRODUCTION SANDER

Speeds Sanding of Regular and Irregular Shapes, Curves, Angles

Atlas BELT and DISC SANDER



For production or fine pattern work you can't beat the versatility of this Atlas sander. The disc is 10". The belt is 4" and operates in both horizontal and vertical positions. The tilting table can be used with either belt or disc. Table is precision-ground for smooth work feeding, and grooved for a mitre gauge to simplify duplicate work. Ball bearings and traditional Atlas-tool ruggedness assure lasting accuracy. See this sander at your Atlas dealer's — ask him to show you every feature. Send for the latest catalog.

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is more economical to use . . .
forms permanent, waterproof bonds

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"Penacolite" Adhesive G-1288 is a two-component resorcinol-phenol formaldehyde resin adhesive. It cures rapidly without acid catalyst and provides a strong, lasting bond. Like all Penacolite Adhesives, G-1288 forms bonds that remain as strong as the woods they join, under all conditions of service, including exposure to fresh or salt water.

"Penacolite" Adhesive G-1288 will also bond phenolics, all cellulosic materials, many plastics, and some rubbers.

"Penacolite" G-1288 now enables industries which formerly could not afford to employ costly straight-resorcinol adhesives, to get the superior bonding of resorcinol-base adhesives, at a lower cost.

Write today for further details about new money-saving "Penacolite" Adhesive G-1288. Remember, too, that our technical service is always at your call.

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The original waterproof, room-temperature-setting adhesives

EVEN IN A STACK OF HARDWOOD LIKE THIS— THE BLADE SLIPS THROUGH AS SMOOTHLY AND EASILY AS THOUGH IT WERE BUTTER

NOTHING EQUALS

Tannewitz for HIGH SPEED BAND SAWING

In selecting a band saw it pays to be satisfied with nothing less than the very best—a TANNEWITZ. You will save any possible difference in price thousands of times, through greater production, cleaner, smoother, faster cutting, convenience of operation and the added years of trouble-free service it will give you. They're so perfectly designed and built for high speed band sawing that even when delivering nearly two miles of saw blade travel per minute, you can hardly hear them run. Get the complete facts before you buy any band saw. Write for Bulletin "GH".

It's a pleasure to operate a Tannewitz High Speed Band Saw.

SAWING MACHINERY SPECIALISTS

The TANNEWITZ WORKS GRAND RAPIDS MICHIGAN

"Does a smoother job than any sander we've ever tried" *

Black & Decker Utility No. 88 SANDER

only $64.50

*reports
Mr. George Potthast,
Potthast Bros., Inc.,
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"10 Times Faster"—"Eliminates Tiring Hand-Sanding"

POTTHAST BROS., INC. specialize in fine reproduction furniture, so quality is their foremost objective. Mr. George Potthast, after trying the new B&D Utility No. 88 Sander, says, "We've tried lots of power sanders—but they all left lines in the work, and we had to set them aside. This new sander is different—it does a beautiful job; it eliminates tiring hand-sanding; and it's ten times faster! It's a wonderful tool!"

Outstanding features of the B&D Utility No. 88 Sander include sanding plate extending beyond housing for close quarter work, quick-change paper holder, modern switch handle and auxiliary knob handle with choice of three positions for better control. For free demonstration, see your nearest Black & Decker outlet! THE BLACK & DECKER MFG. CO., 635 Pennsylvania Ave., Towson 4, Maryland.

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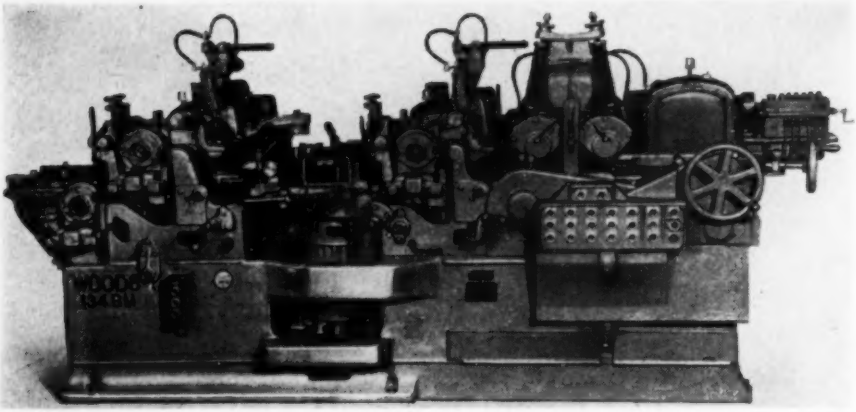
PORTABLE ELECTRIC TOOLS

A CENTURY OF PROGRESS

"THE MOULDERS OF WOODS"

FOR TODAY'S REQUIREMENTS



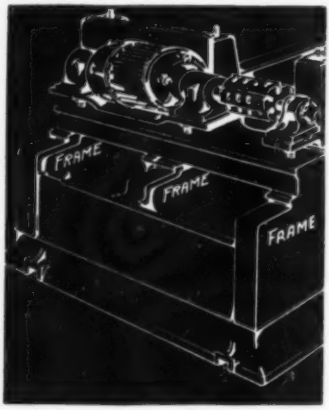
FRONT VIEW

100% BALL BEARING

Woods 134BM Five Head "LAG-BED" PATENTED Electric Moulder with Forced Feed Lubrication for Lag Bed and Centralized Lubrication for Feed and Oscillating Shafts

Woods 134BM five head design with second top head affords unusual flexibility, allows distribution of cut, results in its ability to meet today's demand for a better product.

Frame construction consists of three side frames mounted on a solid base and heavily girted at each end.



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Have YOU Considered These Extra Profit Possibilities?

Perhaps you are already making money from waste wood, in addition to burning it as cheap fuel. But have you explored ALL the possibilities suggested by the list at the left?

In any of the uses for which you may sell your waste, most important is its proper reduction and preparation. Efficient, low-cost handling — consistent uniformity — minimum equipment investment — economical power requirements and maintenance — all are factors that can mean the difference between profit and loss.

These are the things with which Williams can help you! Many years of experience in designing equipment especially for profitably hogging, grinding, sizing and handling of wood waste are at your service without obligation.

A FEW PROFITABLE USES FOR WASTE WOOD

AS WOOD FLOUR FOR:

- Linoleum filler
- Plastics filler
- Composition flooring
- Artificial wood
- Molded products
- Insulating brick
- Glue extender
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— and many other specialized products

AS SAWDUST FOR:

- Hardboard
- Insulating wallboard
- Soundproofing board
- Gypsum compositions
- Animal bedding
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ALSO for various types of papers used for many purposes

Let's Discuss It!
WRITE TODAY

No. 50 "S Type" No-Nife Hog. Note rugged construction typical of all Williams equipment.

WILLIAMS COMPLETE LINE INCLUDES

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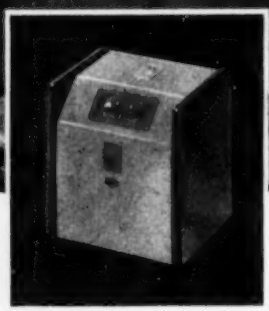
OLDEST AND LARGEST MANUFACTURER OF HAMMER MILLS IN THE WORLD

Behind every successful application of DIELECTRIC HEATING you'll find WESTINGHOUSE



NIGHT SHIFT ELIMINATED, LABOR COST REDUCED 57%, $10,000 SAVED ANNUALLY

Edge-gluing—one of first and foremost uses for Westinghouse Dielectric Heating—is shown here as used by Williams-Brownell. A Westinghouse 10KW generator is the backbone of this setup. Combined with a Hart-Union Electrogluer, the installation is certified for FCC regulations. The speed and quality of panel production resulting from this combination can bring extraordinary economies to you, too. For further information, write Westinghouse Electric Corporation, Dielectric Heating Section, 2519 Wilkens Avenue, Baltimore 3, Maryland.

J-02258

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Westinghouse

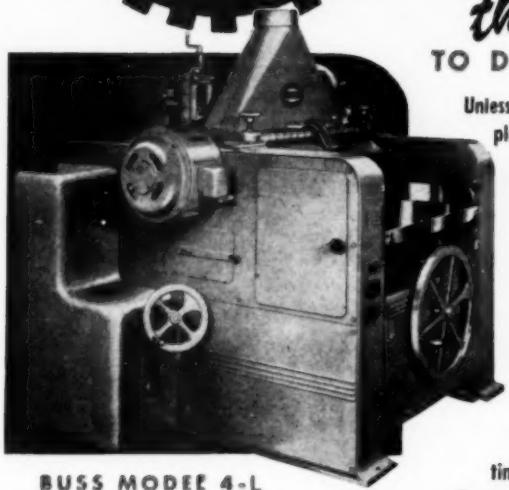
IT'S USUALLY FAR CHEAPER to OWN

BUSS PLANERS

CABINET PLANERS

than

TO DO WITHOUT THEM!



BUSS MODEL 4-L

Buss Model 4L, 24" to 30" x 8" Single Surface Cabinet Planer. The line contains single and double surface types to suit every production set-up, including the surfacing of rough lumber.

Unless yours is a modern, up-to-the-minute planer, a current BUSS Cabinet Planer in your shop would quickly demonstrate savings that would repay its cost many times over in a relatively short time. In the first place, it would give you excellent finish planing at three to four times the rate of speed of older planers. That means greatly increased production—of a quality that cuts down on the cost of following operations. Secondly, you would find that set-up and change-over time would be cut as much as 60 to 70% by our exclusive, patented lever-action controls which make absolutely accurate adjustments a matter of seconds rather than long and tedious operations of varying accuracy. Third, you would find that knife grinding and jointing is reduced to a small fraction of the time required on the older planers. This is due not only to the convenience of the BUSS built-in equipment, but the accuracy with which the knives may be ground so that each does its proportion of the cutting. These are only part of the features that make it far cheaper to own modern BUSS Planers than to do without them. Why not investigate them. Write for bulletins.

PLANER SPECIALISTS EXCLUSIVELY

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BUSS SINCE 1862 MACHINE WORKS

1. 8 Powered feed rolls
2. No arbor or table adjustment
3. Throat plate cutting attachment
4. Safe double kick-back guards
5. Rigid—free from vibration
6. Pre-lubricated, sealed bearings
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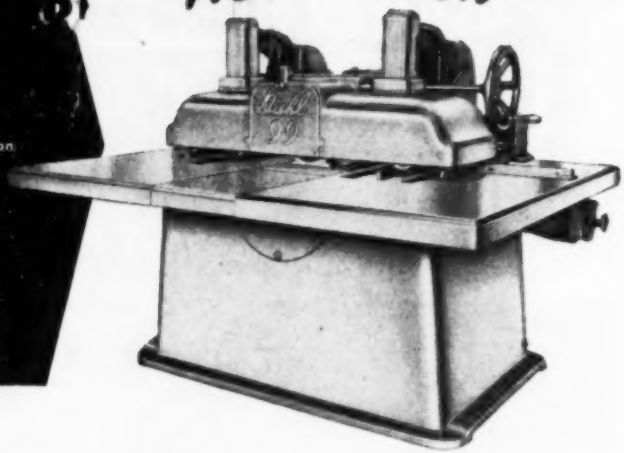
8. 8 speeds, 50-180 FPM (faster if desired)
9. Standard motors
10. Designed for carbide-tipped saw blades

New *New*



Better multiple ripping..faster..easier..safer with the *New Diehl #99 Multi-Rip Saw*

● *Completely New Design!* Finest achievement in modern gang-rip saw development . . . latest addition to Diehl precision production woodworking machinery.

New Diehl #99 Multi-Rip Saw, unusually compact and sturdy, incorporates special features which mean greater safety, reduced change-over time and less maintenance. Rigid overall construction assures accuracy—precision—freedom from vibration—and high production. Designed for carbide tipped saws. Throat plate cutting attachment developed for this machine makes changing and setting up saw gang quick and easy.

For information contact your nearby Diehl representative or phone the factory. Ask for Bulletin MRS-1052.

Where Precision Craftsmanship is Honored . . .

On the Banks of the Wabash

THE G.M. **Diehl** MACHINE WORKS, INC.

WABASH, INDIANA • U.S.A.

TAKE THIS TIP...

and get up to 300 TIMES more Production Cutting with...

SIMONDS *Carbide-Tipped* SAWS

Carbide-Tipping "Simonds' Way" gives you a saw with teeth that fight off wear, that give record-breaking production hours between sharpenings, that leave surfaces so smooth they require little or no further finishing.

In a Simonds Carbide-Tipped Saw you get extra quality and extra value . . . special analysis alloy steel from Simonds' own mill, precision grinding and skillful tensioning, top-grade carbide tips brazed into place by Simonds special method . . . highly polished surface finish . . . perfect roundness, balance and tooth alignment. All these advantages add up to smoother, freer, straighter cutting and long, trouble-free service.

Standard-size saws are available from stock through your Industrial Supply Distributor. Call him today.

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SIMONDS NEW
CARBIDE TIPPED SAW CATALOG
Just off the press, this new catalog includes complete listings, specifications and recommendations covering Simonds complete line of Carbide Tipped Wood Cutting Saws. Address the nearest Simonds Factory Branch.

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Factory Branches in Boston, Chicago, San Francisco and Portland, Oregon. Canadian Factory in Montreal, Que. Southern Service Shop in Meridian, Miss. (formerly J. H. Miner Saw Mfg. Co.)
Simonds Divisions: Simonds Steel Mill, Lockport, N. Y., Simonds Abrasive Co., Phila., Pa. and Arvida, Que., Canada

Drexel Furniture Company, Drexel, N. C., attach their bed rail slat bearers with glue and Auto-Nailer.

SLAT BEARERS *attached* with NEW SPEED at LOWER COST.

GLUE and AUTO-NAILER* DO A PERFECT JOB..FASTER.

The Auto-Nailer is unequaled for attaching tight-jointed bed rail slat bearers . . . eliminates boring and screwing or glue clamps. AUTO-NAILER'S 1,000-POUND-SQUEEZE GLUE-NAILING LETS YOU CONTINUE PRODUCTION WHILE THE GLUE SETS.

Auto-Nailer makes, drives and countersinks 3-NAILS-A-SECOND. It is also great for such glue-nail jobs as banding tops and attaching cleats to panels . . . invisibly.

Let us show you what Auto-Nailer will do.

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LIKE TO SEE SOME SAMPLES? Send us specimens of your work. We'll be happy to demonstrate Auto-Nailer's virtue and versatility, no obligation.

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ROSY TRADE VISTA for 1953

While every editor hesitates to spend much time with a crystal ball, top industrialists have spoken most optimistically of the first six months of 1953. In fact, we have gone so far as to give rather a rosy hue to this cover—the first issue of 1953.

More than 4,000 businessmen attended the annual meeting of the National Association of Manufacturers in December. Typical of the views expressed is this statement, "Business is pretty good. We have been moving forward since July. . . . We expect business to remain good until the middle of 1953, at least. Beyond that it's difficult to say."

Optimism has been felt in many association meetings and various conventions. At the annual meeting of the Prefabricated Home Manufacturers' Institute the members heard that legislation affecting VA and FHA procedure will be such as to reduce the pressure toward getting the price of homes lower and lower. This is encouraging news for the entire woodworking industry.

Helping further to set the pace for our industry will be the several conventions slated for this winter season. Two scheduled for January, and in Chicago, will be the Winter Furniture Market, January 5-16, and the National Association of Home Builders, January 18-22. Final figures are not available for 1952 furniture factory shipments. However, recent opinions have indicated that "the all-time winner might be '52."

As early as last September the National Hardwood Lumber Association heard Professor Sumner H. Slichter, Harvard University, give an optimistic outlook to the economic picture. He said, "Outlays for consumer goods in the latter half of 1953 and 1954 will be sustained to some extent by the large maturities of E-bonds." His forecast, while given with a word of caution about the last half of 1953, concluded that, "Sooner or later, of course, the great and increasing volume of technological research will produce an increase in the demand for goods."

The F. W. Dodge Corporation said early in December that, "It is virtually certain that construction totals for 1952 will surpass the previous all-time high of 1951."

We have concluded 1952 and found it to be a good year. The entire staff of WOOD WORKING DIGEST joins me in sending you our best wishes for this New Year—may it prove as beneficial as 1952 to our industry.

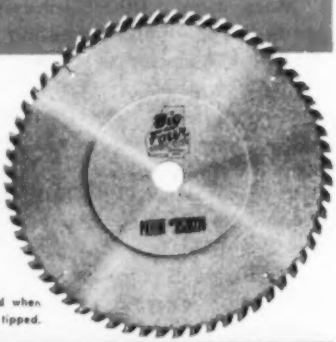
NED BAILEY,
Editor-in-Chief

NEW DESIGN SAW BLADE

TYPICAL PRICES

Diameter	Teeth	Price
12"	60	$149.50
14"	60	$153.50
16"	60	$157.50

World's most satisfactory blade for smooth splinter and chip free finished. Especially designed for trimming, mitering and cross cutting fancy veneered panels, ply woods, decorative laminates and solid woods.



Expenses are clipped when it's Big Four Carbide tipped.

BIG 4 SAFETY SAW BLADE

TYPICAL PRICES

Diameter	Teeth	Price
5⅛"	6	$14.40
8"	10	$18.60
10"	10	$24.20
12"	12	$31.00
14"	14	$34.20

Revolutionary in design, performance and PRICE. Anti-kickback features mean less operating effort, carbide tips give longer life. Blades for all sawing operations available 5⅛" to 16" diameters. For portable electric, hand- or chain-fed machines.

"Ask your local dealer—if he is unable to supply you, contact us directly."

Big 4 produces saw blades for every purpose, from school room manual training to large industrial projects.

BIG FOUR CARBIDE TOOL COMPANY
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For free comprehensive booklet write to: Big Four Carbide Tool Co., 5938 Carthage Avenue, Cincinnati 12, Ohio.

Comments from THE NATION'S CAPITAL

By Arnold Kruckman
Washington Correspondent

"Consumers can expect greater value and better service for their dollars spent on lumber in 1953. This is the result of more efficient production methods, greater utilization of waste materials, improved cutting practices and better merchandising programs," said John B. Veach, Chairman of the Board, National Lumber Manufacturers Association.

"There are ample supplies of lumber for all civilian and defense requirements," continued Mr. Veach. "Indications are that overall demand for lumber will be relatively firm in 1953. Government, builders, industrial users and the general public will buy about the same amount of lumber they purchased in 1952.

"Last year lumber consumption totaled an estimated 38.9 billion board feet—1% above 1951. If this wood had been used in home construction, it would have built approximately 4,862,500 average-size frame houses. It is expected 1953 production will approximately equal 1952.

"Lumber companies find their operating costs up slightly because of wage increases and price boosts Government allowed this fall for metal products such as saws, trucks and heavy equipment. Improved production methods and advances in wood technology will enable the industry to absorb these higher costs.

"Defense developments and the pace of new construction will have the greatest influence on lumber demand in 1953. Lumber demand is certain to be bolstered by the prospect of increased building activity in most fields. The Government's prediction that slightly more than one million homes will be started in 1953 is a very healthy sign.

"Impending relaxation of controls on commercial and amusement building will increase markets for wood. Another boosting factor is the trend to more one-story buildings using fabricated and laminated trusses. This trend is particularly marked in

construction of amusement facilities, churches, shopping centers and public schools.

"Lumber in the defense program also will hold up well and probably improve. This prospect is linked to indications of a marked increase in military expenditures for new construction.

"Sustaining influence will be the progress made in encouraging the alternate use of lumber and wood products for steel and other materials. Equally important is the development of new wood products and techniques which will help strengthen lumber's position as the nation's most versatile building material.

"All those engaged in any phase of the industry which employs wood have reason to view the year ahead with at least cautious optimism."

Federal Government procured $3,571,000 worth of lumber and $2,918,000 worth of wood products during the last week of November and the first two weeks of December. With few exceptions, the lumber was purchased by the Army. The wood products included folding cots, benches, showcases, cribs, bathinettes, wooden pipes, pallets, furniture, desks, boxes, chests, beds, school furniture, plywood, brush blocks, tables, plywood kits, containers and masts. The biggest single purchase was $500,000 worth of containers; next, pallets, one order alone being for $256,000 which went to the Durkee Manufacturing Company at Pine River, Minnesota. Watts Manufacturing Company at Ronceverte, West Virginia, received an order for $247,000 worth of cases. Army also was the greatest single purchaser of wood products; others were the Post Office Department, Veterans' Administration, Navy, General Services Administration, Department of Justice and the Department of Agriculture.

We will be glad to supply the names and addresses of those to whom readers of WOOD WORKING DIGEST may apply for information about bidding for Government contracts.

In 1953, construction is expected to reach a new peak of $33,500,000,000, according to the Department of Commerce and the Department of Labor. A new high of $22,200,000,000 is expected to be spent on new private construction, including new housing, commercial buildings and utility plants. New private housing is estimated at a total of $10,200,000,000.

Two demountable-type houses, erected at the naval powder factory, Indian Head, Maryland, as an experimental and demonstration project, were opened with much ceremony by high-level Army, Navy, Air Force and Marine Corps officers and officials of the Housing and Home Finance Agency, Bureau of the Budget, Atomic Energy Commission, the Department of Defense, and officials of the Prefabricated Home Manufacturers' Institute. The purpose of the project is to compare the livability of the houses produced by the Institute with the portable family dwellings, in terms of cost, space standards and re-use. The demonstration is being conducted near Washington to give all the Government agencies concerned with defense housing an opportunity to observe it.

One of the houses is a semi-detached, two-family structure, and the other is a single-family detached unit similar to the

CONTINENTAL'S PROOF BOOK

W. N. LARKIN

Amherst College, B.A., 1917. Joined Sargent and Company 1949 as Assistant Superintendent in Lock Division. Became Purchasing Agent 1951.

Active member of National Purchasing Agents Association; Executive Associates Forum; Quinnipiack Club; N. H. Country Club.

SARGENT & COMPANY
MANUFACTURERS
NEW HAVEN 9, CONNECTICUT

December 15, 1952

Continental Screw Company
New Bedford, Massachusetts

Gentlemen:

This is the time of the year when we take inventory. It has always been my practice to take "inventory" of our suppliers and see how they have shaped up and what kind of a job they have done for and with Sargent & Company over the past 12 months. It is certainly a pleasure to inform you that your performance has been among the best.

It is interesting to note that only a few short years ago you received your first order from us and that was for taped screws. Since that time, because of your performance and quality, you have grown to be one of our major sources for fasteners. When I asked myself why, the answer was clear. You have furnished us with a quality product at a fair price and completely fulfilled your obligation. Whenever we needed a little extra something you went out of your way to take care of our needs.

We sometimes forget that business isn't done primarily by companies but by the people who make up these companies, and your people have certainly made doing business with you a pleasure. It is my sincere hope that this fine relationship will continue to prosper and grow.

Cordially,

SARGENT & COMPANY

W. N. Larkin

W. N. Larkin,
Purchasing Agent

You too can count on Continental.©TM

CONTINENTAL SCREW COMPANY INC. 1904

Manufacturers of HOLTITE Fastenings For Every Purpose

CONTINENTAL SCREW COMPANY, NEW BEDFORD, MASS., U.S.A.

portable family dwelling used as temporary defense housing in a number of critical housing areas, mostly for military personnel. Considerable wood, in panels and otherwise, is used in the Institute's prefabricated houses.

Seventy-four percent of those who bought houses during the past three years wanted one-story structures. "Why People Buy the Houses They Do" is a survey reported in Housing Research No. 4, available from the Housing and Home Finance Agency, Washington 25, D.C.

"The Materials Use Survey: A Study of the National and the Regional Characteristics of One-Family Dwellings Built in the U.S." is another publication just issued by the Housing and Home Finance Agency, Washington 25, D.C. With it comes a pamphlet, "Regional Design Characteristics of New Houses and Regional Patterns of Materials Used in New Houses."

Charles M. Genaux, Assistant Chief, Division of Forestry, Bureau of Land Management, Department of the Interior, has resigned to become a member of A. G. Hall and Associates, Washington, D.C., a firm of consulting foresters and forestry products counselors.

Harry S. Mosebrook, formerly forester for the Monongahela Power Company, is now Forest Resources Assistant in the Natural Resources Department of the Chamber of Commerce of the U.S., at Washington, D.C.

William S. Edmunds, formerly Executive Director of the North Carolina Forestry Association, was appointed to head the Industry Division of the American Forest Products Industries, Inc., according to an announcement by A.F.P.I.'s Managing Director, C. A. Gillett.

* * * *

W. Ridgely Chapline retired from the Forest Service to go with UN. His successor is Joseph F. Pechanec who becomes Chief of the Division of Range Research in the Pacific Northwest Forest and Range Experiment Station.

Ronald Richardson, Editorial Director of the American Forest Products Industries, Inc., has been appointed Assistant Managing Director of the organization. He hails from Goldendale, Washington. Robert E. Rutherford, formerly Assistant Editor of the "Atlanta Constitution," has been appointed Assistant Information and Editorial Director of A.F.P.I., Inc.

Franklin Bradford, former Assistant City Editor of "Dallas Times," has been appointed Field Manager in New Orleans for A.F.P.I., Inc. Paul Nelson, formerly with the United Press in Salt Lake City, is the Woods Products Specialist on the editorial staff of the A.F.P.I., Inc.

A. B. McKellar is the Chief of the Lumber Products Section of the Building Materials Division in NPA. He has an extraordinary knowledge of woodworking industries, of lumber, and practically of all industries that have to do with wood. He just recently returned from a swing around the U.S.

See how the new Thermatron High Frequency Generator with Automatic Power Control Speeds up Edge Bonding!

Thermatron

HIGH FREQUENCY GENERATORS AND EQUIPMENT

In the installation shown, the new 20KW THERMATRON Generator is used in conjunction with a Weldon press, which is completely shielded and guaranteed to meet FCC requirements. A new automatic tuning device delivers to the load the maximum efficiency of the generator

REDUCES PRODUCTION TIME BY 33⅓% AT SENSENICH CORPORATION PLANT!

They agree at the Sensenich Corporation, Lancaster, Pa., that their new 20 KW THERMATRON and batch-type press installation is really the last word for high production edge bonding. THERMATRON'S large power capacity and automatic controls quickly proved themselves in accommodating the wide variety of loads run at the Sensenich plant.

This modern high frequency generator—product of years of Radio Receptor research and development—has indicator lights and meter readings to tell at a glance the exact status of the material in work. Power and tuning automatically adjust to load conditions during the entire cycle . . . and of course all the latest protective devices are included.

THERMATRON engineers are ready to make suggestions regarding your wood-gluing problems . . . Write us now, and request our new brochure No. WD-22

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RADIO RECEPTOR COMPANY, Inc.

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The various agencies of Government interested in wood and wood products are still working on the plan to launch a campaign for the expansion and rehabilitation of some of the smaller plants of the wood products industry. If the new Administration goes along with the idea, they think it is probable that it will be possible to secure the necessary funds to initiate the project.

Leo D. Weller, Washington representative of the National Woodwork Manufacturers Association of Chicago, thinks there will not be much immediate change of personnel in the Government agencies with whom he is liaison man for his association. Mr. Weller keeps the members of his organization advised as to what the Government needs, and what is being constructed, and secures specifications to be distributed among the association membership so they may, if they wish, bid on the work.

Timber Engineering Company, an affiliate of N.L.M.A., held its annual meeting late in November and re-elected Leo V. Bodine, Chairman of the Board; Harry G. Uhl, President; Richard G. Kimbell, Vice President; Leonard G. Carpenter, Treasurer; Mary Ahern, Assistant Treasurer; and Ralph G. Gloss, Secretary.

T. Lincoln O'Gara, Vice President of Weyerhaeuser Sales Company, was the only new member elected to the board. The other members re-elected are: J. R. Bemis, C. Arthur Bruce, M. L. Fleishel, A. J. Glassow, Earl Houston, Charles W. Ingham, Ralph R. McCartney, Earl McGowin, Chester B. Stem, John B. Veach, R. C. Winton and Messrs. Bodine, Uhl and Carpenter.

Two new trustees were named to the Board of the American Products Industries, Inc., in November. They are: Robert H. Evans, Frost Lumber Division, Olin Industries, Inc., Shreveport, La.; and Clyde Morgan, Rayonier, Inc., New York. Re-elected were Clyde S. Martin, Weyerhaeuser Timber Company, Tacoma, Washington, and Walter J. Damtoft, Champion Paper and Fibre Company, Canton, North Carolina, as Vice President; P. H. Glatfelter, P. H. Glatfelter Company, Springville, Penn., Treasurer; and C. A. Gillett, Washington, D.C., Secretary and Managing Director.

Trustees re-elected were E. B. Birmingham, Hammond Lumber Company, San Francisco; Alexander Calder, Union Bag and Paper Corporation, New York; Leonard G. Carpenter, McCloud Lumber Company, Minneapolis; William Hilton, Bangor, Maine; and Charles H. Sage, Kimberly-Clark Corporation, Neenah, Wis. J. R. Bemis, President of the Ozan Lumber Company, Prescott, Ark., is the new First Vice President of N.L.M.A., succeeding Ralph McCartney.

Executive Vice President Leo V. Bodine, of N.L.M.A., announced the appointment of N.L.M.A.'s Chief Engineer, Frank J. Hanrahan, as Executive Vice President of the American Institute of Timber Construction, Washington, D.C. A.I.T.C. is a technical organization composed of timber fabricators and allied interests.

Francis H. Eyre is the new Chief of the Division of Forest Management Research in Washington, D.C. He succeeds Leonard I. Barrett, who becomes Director of the Timber Resource Review project of the Department of Agriculture Forest Service.

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PAY FOR THEMSELVES

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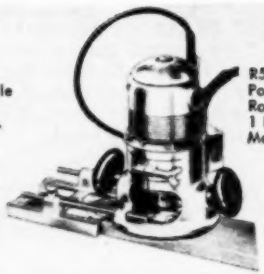
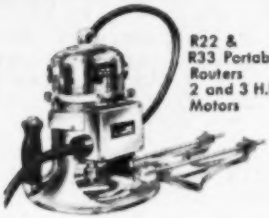
R8A Portable Router ½ H.P. Motor



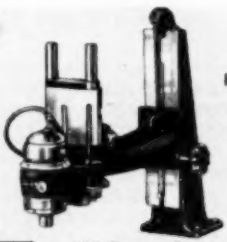
R5B Portable Router 1 H.P. Motor



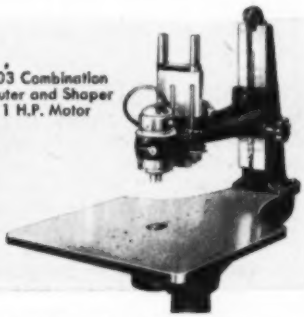
R22 & R33 Portable Routers 2 and 3 H.P. Motors

It doesn't take years to charge off the cost of a Stanley Router. These versatile machines often pay for themselves on the first job. On tricky cuts as well as the more usual routing, templet making, fluting, veining, mortising and dovetailing, Stanley Routers do a real professional job without need for sanding.

On the job from East to West . . . made by men who make tools best



101 Overarm Router 1 H.P. Motor



103 Combination Router and Shaper 1 H.P. Motor

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Ask your local Stanley Distributor to send one to your plant. Try it out—you'll like it. If more convenient write us for complete catalog 96. Stanley Electric Tools, 433 Myrtle St., New Britain, Conn.

HARDWARE • TOOLS • ELECTRIC TOOLS • STEEL STRAPPING • STEEL

"United States Tree Books," which identify more than 2000 trees and shrubs in the U.S., may be had by writing to the U.S. Department of Agriculture, Washington 25, D.C. U.S. Forest Service collected $11,383,571 more from the sale of timber, grazing permits, land use and water power permits than was necessary to cover the cost of operations.

The Forest Research Advisory Committee of the U.S. Department of Agriculture met in Washington in December and recommended intensified research into forest fires, forest insects and diseases; watershed management; forest economics; forest utilization; forest management and range management. Dr. Carlton P. Barnes of the Agricultural Research Administration is the Executive Secretary of the Forest Research Advisory Committee. Its members, representing woodworking interests, lumber interests and various states, came from Ohio, Louisiana, Georgia, Tennessee, Washington, Utah, California and Maryland.

U.S. District Court of Minnesota declared valid the Executive Order which prohibited flying under 4000 feet over the Superior National Forest in Minnesota. This is expected to preserve the woods in the area.

According to the Egyptian Embassy, an American firm will build prefabricated houses in Egypt at $1,350 each, plus customs duties and other taxes imposed by the Egyptian government. The builder is prepared to build 50 houses a day under normal working conditions, and agrees to employ Egyptians only.

Burma, through MSA, has purchased dowel machines, drawer dovetailers, sanders and routers. France, with MSA funds, bought $500,000 worth of soft and hardwood logs, and other sawmill products; $50,000 worth of shuttle blocks and blanks; $75,000 worth of battery separators and $120,000 worth of pencil slats.

During January, at the Aberdeen Proving Grounds, the Army will test the three all-wood trucks. Army Ordnance and Corps of Engineer Officers, together with N.L.M.A. and TECO people will participate in the test. Director of Research C. A. Rishnell points out: ""Although designed and built primarily for the military, there is no reason why manufacturers cannot put all-wood truck bodies into production immediately for commercial use. Produced in quantities, available data indicate the truck would be competitive with steel."

Honduras, 1951-52, exported practically all of its mahogany to the U.S.

The International Bank for Reconstruction and Development loaned $3,500,000 to the Bank of Finland for modernization and expansion of Finland's wood products industry. The loan will supplement the $9,500,000 which the bank made available for the Finnish wood products industry last April. In all, it has loaned, for the timber and wood products industries, $25,700,000.

What's Screwy? *by Phillips*

"Oh, he's not so smart. It's just that those Phillips Screws are so easy to drive."

PERFECTLY MATED! Only Phillips Drivers are perfectly mated to Phillips Screws. Look for the name Phillips on the shank.

EASE of driving is only *one* big advantage. Phillips Screws save time, work and money. They also add structural strength, set up tighter, resist the loosening effect of vibration. And they eliminate driver skids, damaged parts and split screw heads.

The identifying X on the cross-recessed-head identifies the x-tra quality of Phillips Screws instantly. Be sure to state "Phillips" on the specifications.

PHILLIPS *Cross-Recessed-Head* **SCREWS**

X *marks the spot . . . the mark of extra quality*

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New! PRODUCTION GENIUS
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World's Largest
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FAST—Drives 33 staples in 10 seconds.
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We are glad to report that, from all indications, furniture business will continue to be good in 1953. Top industrialists tell us that there will be greater buying of home furnishings—at least for the first part of 1953—than there was this year. The great number of people employed and the relaxed credit restrictions are responsible. This feeling of optimism is further encouraged by the last report we have from the National Retail Furniture Association showing a 2.2% increase in buying over 1951. Dealers are generally optimistic in their outlook.

Particular dates to remember this month include the Chicago Furniture Market which begins January 5th and continues until the 16th. The National Association of Home Builders will be holding its convention January 18-22.

The National Hardwood Lumber Association reports a very healthy and active closing to 1952. Reports are particularly good about maple and birch. This association's fiscal year, which ended last August, showed a volume equal to 1951 and a footage considerably ahead of the 1951 figure. By the end of 1952 the figures showed a small gain over the previous year. Prices right now are firm, competitive and almost at ceiling levels.

Have you heard of "village forests"? You may not know that many small towns have taken over the development and management of small forests adjacent to their communities. Practically all of them who have had a forest under their management for 10 or more years have profited far out of proportion to the effort and money invested. As Ripley would say, "Believe it or not, there are towns in the U. S. at the present time which do not tax their residents because all expenses of local government are met by products from municipal forests."

A survey just completed shows another positive value of "village forests." They were not affected by the recent drought conditions that visited the greater part of the country because of the care and attention given these trees.

The end of 1951 saw inventories of veneer getting lower, particularly in the top grades of all major species. Shipment, by the end of 1952, had advanced approximately 20% over mid-year, notwithstanding the fact that production ran higher up to that time. Among the leaders in demand were avodire, cherry, rift white oak and sliced walnut.

It is optimistically hoped that the big LeTourneau lumber operations in Liberia, South Africa, will be felt in this country in the not too distant future. Particularly is this true of imports of mahogany as well as several of the more exotic woods found there.

More exterior attractiveness and variety of design now give a "tailor-made" appearance to the current construction of prefabricated homes. A group of 80 such buildings nearing completion in a suburb of Tulsa, Okla., features 10 basic exteriors. These dwellings take on a different look by being placed on the building plots with a different side of the house facing the street in each instance. What is the front of one house is the side or back of another. This requires a certain amount of architectural ingenuity. The difference in appearance is further augmented by varying the outside finishing material, roof and siding color combinations.

Beautiful veneers are getting considerable attention from TV manufacturers these days. We attended a showing of new models recently that included cabinets made of both domestic and foreign woods. These cabinets were not only masterpieces of workmanship, but combined some of the most beautiful and exotic grains we have ever seen. Those holding the exhibit were keeping a check on visitor preferences. Mahogany was among the more popular woods, although medium and lighter colored finishes were preferred by the majority.

We should like to call your attention to the article on American woods which is being continued in this issue of WOOD WORKING DIGEST. Next month we expect to complete these "thumbnail" sketches. Afterward the entire series will be reprinted in booklet form. If you are interested in ordering one of these booklets, please drop us a line.

There are several ways of skinning a log. One that we had not seen in a long time we encountered recently in a pulp mill. Instead of shaving the bark off with knives, the logs were dumped into a large machine. In the machine they are revolved so that they rub against each other until they are peeled clean. A flexible, grommet-type belt holds them in contact during the process.

5 Reasons Why DE WALT Safety Power Feed Gives You Greater All-Around Cutting Efficiency!

1. YOU MAKE A VARIETY OF CUTS — You rip, bevel rip, plough, groove, rabbet, shape and mould. And you may make many of these cuts at speeds up to 90 feet per minute!

2. YOU MAKE EACH CUT WITH PERFECT ACCURACY — Because the material is automatically fed at a constant rate, marks caused by uneven hand feeding are eliminated.

3. YOU REDUCE COSTS — Moulding, shaping and other jobs can now be performed by one man—instead of the two previously needed. Operator starts the material—end rollers guide it through perfectly.

4. YOU GET UNPRECEDENTED SAFETY — Now, as never before, you are completely guarded against kickback accidents. These are prevented by De Walt's special anti-kickback device.

5 YOU CUT WITH AMAZING SPEED — Power feed operates at three speeds—22½, 45 and 90 feet per minute. Automatic performance takes the guesswork out of cutting...gives you precision results every time.

Why not see your De Walt dealer for demonstration, and find out how the De Walt Safety Power Feed can bring greater efficiency and economy to your cutting operations. Write for details to Dept. WWD-1, Lancaster, Pa.

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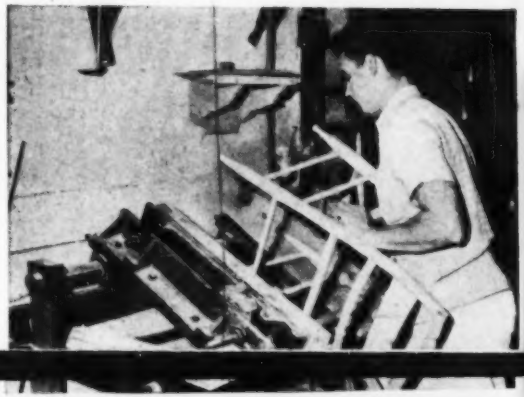
ONE OF 12 WOOD-LOK* FEATURES

ONLY 20 MIN. CLAMPING TIME

for joint assembly operations that normally require 6 to 8 hours.



WOOD-LOK* Glue will shorten your assembly lines . . . free working floor space . . . speed production. It is the only type of resin wood glue that can be handled and machined after a clamping time of 20 to 30 minutes. It sets with a speed comparable with hot animal glue.

ing has to be added, soaked or heated. Its characteristics never change.

ing has to be added, soaked or heated. Its characteristics never change. It permits continuous production – with no time lost to mix fresh glue or replace constantly hardening glue.

WOOD-LOK* glues are specifically blended to suit your job. Their colors range from uniformly controlled pure white – *which dries colorless and leaves no glue line* – to darker shades for special uses.

WOOD-LOK* Glue was designed for Joint Assembly Operations where limited clamping time or rub joints are necessary to speed production. Or where an economically applied, fast setting durable bond is required for wood working.

WOOD-LOK* is available – NOW! For complete information address: 270 Madison Ave., New York 16; 3641 So. Washtenaw Ave., Chicago 32; 735 Battery St., San Francisco 11; and other principal cities. In Canada: National Adhesives (Canada) Ltd., Toronto and Montreal. In England: National Adhesives Ltd., Slough.

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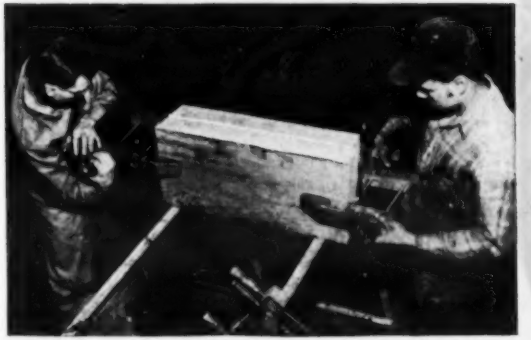

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MOLDED PLYWOOD *BONDED* THE RAYBOND WAY—

VERSATILITY of Raybond's h.f.* unit is *proven* in the Heckman installation. Equipped with an external switch, Raybond h.f.* power supplies the needs of both Edge-gluing press and Molding press forming small plywood pieces such as table ends, etc.

ECONOMY is achieved through speed-up of edge-gluing production on one unit, allowing time for molding press operation in adjacent installation.

The Jolin Corporation's Raybond Edge-gluing unit is equipped with an external switch to power any one of four molding presses by means of a secondary switch. This installation converts veneers into large molded plywood sections such as school chairs, church pews, etc.

The Raybond method produces high-quality, uniform, volume production gluing in an efficient and economical manner.

Let us survey your installation for recommendations, or for more complete details write:

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ELECTRONIC GLUING

A Survey of equipment applications

Part 4—Curved Plywood . . . Edge Banding . . . Scarf Gluing

By Paul H. Graham

THE development of laminating and flat plywood techniques which utilized the favorable features of electronic gluing equipment was spurred by the advent of modern furniture and building construction trends and new bonding methods which originated during World War II in the production of aircraft and other war equipment. Basing their techniques on this experience many production plants have evolved manufacturing processes suited to their own requirements, adapted standard equipment to conform to these requirements, and/or have designed or commissioned commercial equipment concerns to design and build special equipment required to perform electronic gluing of their product to make it a modern mass production material.

Production of curved and molded plywood with electronic gluing equipment is usually done with perpendicular or through heating, with the electrodes placed at both top and bottom of the veneer layup. The basic difference between curved and molded plywood is that curved plywood is so made that the curve is in a single plane while molded plywood has curves in several planes. Various types of jigs and fixtures are used and different methods are used for applying pressure. Bonding is by high frequency dielectric heating. Three basic methods are used to shape the plywood:

1. Solid rigid male and female forms, incorporating electrodes, used to shape plywood by air, hydraulic or mechanical pressure.

2. Solid rigid male form and flexible or fluid female form, incorporating electrodes or means for attaching same, to shape plywood by fluid pressure by means of inflation of pressure bag or diaphragm with air or liquid.

3. Solid rigid female form and flexible male form, as described in No. 2, to shape plywood by fluid pressure from air or liquid inflation.

Although method one is available for use by anyone in design and application best suited to the production of their product, various patents have been obtained on processes using methods two and three or combinations of both. Investigation should be made of any method under consideration which involves these principles to avoid possibility of infringement and subsequent legal trouble. However, most of these patented processes are available for use under license arrangement. Commercial electronic equipment and adhesives manufacturers are usually well posted

on patented processes and should be consulted if there is any doubt.

Methods used to produce flat plywood are not too well adapted to the production of curved or molded plywood — either cold pressing or hot pressing. Cold pressing necessarily limits the number of panels that may be produced at one time, as the radius of curvature changes with each panel and requires a large number of dies and press loadings and unloadings. With electronic gluing equipment only one die or mold is required for each shape, regardless of the number of pieces to be produced. Hot pressing presents a similar problem in single-opening presses and multiple-opening presses are very expensive. Electronic gluing permits a single opening press to be used with inexpensive wooden dies while high frequency energy provides an accelerated curing cycle. Conventional presses may be adapted without too much expense and smaller presses can be used (Fig. 1).

In commercial applications electronic generators are usually arranged to service two or more presses, with their operation synchronized to balance loading, unloading and curing cycles. In a large commercial plywood plant serving the furniture trade, for example, three generator units in 10 kw., 8 kw. and 4 kw. sizes power all presses used for production of curved and molded plywood to provide maximum bonding capacity and versatility of application. The presses are both conventional make and especially built to handle panels from 84" x 36" to 48" x 24". While one battery of presses is being unloaded and loaded, another battery is curing plywood that is being bonded securely into shape.

The range of plywood shapes and sizes possible to produce by electronic gluing is practically unlimited. It further provides an economical, efficient method for mass production of parts used for a wide range of products. Commercial plywood concerns using electronic gluing equipment regularly offer standard components and products for case goods, chairs, automobile bodies, radio and TV cabinets, barrel staves, caskets, juke boxes, pianos and other stringed musical instruments, small boat hulls, aircraft parts, toboggans, skis, luggage, house trim, hockey sticks, tennis and badminton rackets, church furniture and store fixtures as well as all kinds of custom molded plywood to order.

Among the earliest applications were the production of serpentine and other curved drawer fronts, waterfall tops and curved plywood seats and backs in the furniture field. A large opening press was used with a 10 kw. or 15kw. generator and four full-sized curved drawer fronts, laid up with 6 to 10 pieces of veneer, were produced in two-minute cycles. The Columbia Machinery & Engineering Company of Hamilton, Ohio, was one of the first hydraulic press manufacturers to pick up this trend and to manufacture special presses and engineer this kind of setup. One of their installations is used at the American Furniture Company plant at Batesville, Ind. (Fig. 2) to make serpentine fronts; another for seats and backs was observed at the Southern Desk Company plant at Hickory, N. C.

Although it has shown consistently good results with material of lesser thickness, electronic gluing shows greatest economies on curved plywood over ⅝" thick and in molded plywood on compound curvature sections where heating is difficult. If the generator unit is to be operated with a multi-station press, it is also very important that the size, thickness and number of glue lines in plywood in any station be the same to provide equalized curing of the glue lines. This is because the flow of high frequency through the curing station field is always constant.

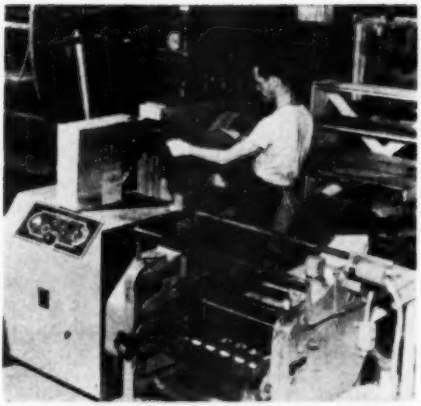

Fig. 1. Small Hannifin press was adapted at Seth Thomas Clock Company, Bristol, Conn., for electronic gluing of curved plywood clock cases. Power is supplied by a 2 kw. Westinghouse r.f. generator unit.

In a typical multi-station press operation at the plant of MacCraft Industries Limited at Sarnia, Ontario, Canada, a Westinghouse 2 kw. 13.6 mc. generator is used with an automatic press designed by MacCraft's Murray Waghorne and built by Russell Bros. of Owen Sound to produce a wide range of molded plywood items. These are chiefly posture seats for school furniture made of one-piece plywood formed with a 90° bend of fairly small radius to make both seat and back.

The automatic press consists of a central frame and hydraulic system which operates four extended press stations. It is arranged to revolve on circular tracks and to stop at pre-set locations. Veneer is double-spread and laid up in the various press stations. Each station carries two heavy copper blades at the top which mesh into contact with overhead contacts from the generator unit as the station moves into the curing cycle. As the press closes after loading and moves into curing position, the generator unit is tuned to the resonance of the load to determine the curing cycle, usually from three to five minutes. During this time the operator charges the next empty station.

This is not a continuous operation, however, as when a station leaves the curing position, the press retains the molded plywood under pressure for one complete cycle to stabilize it. This equalizing was found necessary to prevent the plywood from rupturing under the tremendous stress set up while curing.

Up to six plywood seat backs are molded at one time in a single die. The curvature of the plywood to be molded determines the number of plywood components in one die; also the number of dies in each press opening. Dies used here are normally made of birch or hard maple covered on the inside with sheet copper, but where extreme bends are to be made, the forms are lined with special hard rubber formulated to with-

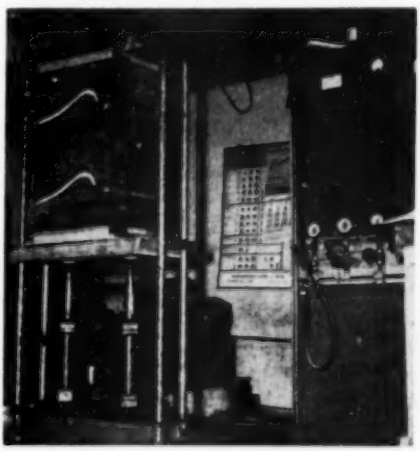

Fig. 2. Columbia press used at American Furniture Company plant at Batesville, Ind., for production of serpentine drawer fronts takes loads up to 36" x 72" with these dies and a Westinghouse 10 kw. generator heats a nine square foot panel, one inch thick, in about five minutes.

Fig. 3. Excellent application of inexpensive wooden dies used in hydraulic press to produce special curved plywood at plant of Dominion Plywoods Limited, Southampton, Ontario, Canada.

stand the constant cycle of heat and pressure.

Another excellent application of inexpensive wooden dies was also observed in Canada at the plant of Dominion Plywoods Limited, Southampton, Ontario, where they are used with hydraulic presses to produce chair and radio cabinet components and other special curved plywood (Fig. 3). A Thermex generator unit supplies high frequency energy and the forms have rigid male and female components. The molds are equipped with metal contact surfaces which serve as electrodes (Fig. 4).

This concern also adapted the vacuum bag method for molding waterfall chest tops, using a 15 kw. high frequency unit to cure the glue bond. The veneer pack is laid up over a mold with one electrode being provided by the surface of the mold and a metal screen cloth serves as the other electrode when it is placed over the canvas-covered veneer layup before a rubber bag fluid pressure of about 40 to 80 p.s.i. is applied by inflating the bag with compressed air.

This process is quite similar to the Raytronic method developed and patented by Steinway & Sons of New York in 1944. The Raytronic method employs ceramic-type male molds cast from a master female pattern or die. The mold is sprayed with metal by the metallizing process, about 1/64" thickness of copper, to serve as one of the electrodes. Glue-spread veneers are laid up around the mold in a staggered build-up and are spot welded in place by a high frequency gun to tack them over the mold, instead of stapling or tacking as used in conventional bag molding methods.

A heavy canvas or felt covering, usually tailored to fit, is then placed over the veneer layup to increase the load of the electronic equipment and to permit easier tuning. A second electrode is applied, usually in the form of copper screen cloth placed over the felt, which carries a thin sheet metal strip around the bottom to permit attachment of leads from the electronic equipment. Tuning stubs are also fastened to this leader, according to design of the generator and size of plywood product to be molded. A molded-to-shape rubber inner tube, or pressure bag, is applied to the outside of the second electrode (copper screen cloth) and a female mold, of counter shape to the male, is applied which is secured by retaining clamps to the male mold before inflation.

The inner tube, which lies between male and female molds outside the high frequency field used to heat the plywood between the electrodes, is inflated by compressed air to apply 50 to 60 p.s.i. pressure on the plywood after the fashion of an inner tube in a tire casing mounted on a rim. Using a cold setting adhesive, the plywood bond is set and plywood is molded to shape by high frequency unit with about 10 kw. output capacity, using approximately 600

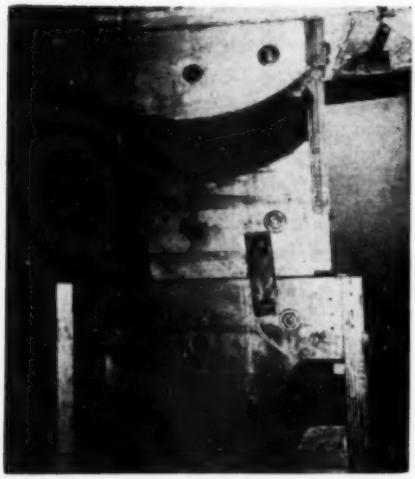

Fig. 4. At Dominion Plywoods Limited curved plywood molds are made with rigid male and female components. Their metal contact surfaces serve as the electrodes for electronic bonding.

watts in a heating period of from seven to nine minutes at a frequency of about eight megacycles and a temperature rise of about 100° F. above room temperature.

An interesting development of a new principle for the production of curved plywood was made and published recently by the Forest Products Laboratories of Canada in Ottawa. This development involves the use of a copper supporting bending strap to the curved plywood and bonding with high frequency heat in a specially designed press. The press has four double-acting, hydraulic cylinders used to supply required bonding pressure and four vertical spring-loaded arms, pivoted at the bottom and free-swinging at the top supporting the copper pressure band.

In operation, after the glue-spread veneers have been placed in the copper pressure band within the open press, four air-operated cylinders furnish bonding pressure, two being mounted at opposite sides of the press slightly above the bottom of the stroke of the top cylinder, and a bottom cylinder is provided for upward pressure. The top ram carries the male-shaped form which shapes the curve of the plywood. The top and bottom rams exert pressure toward each other until the top ram begins to force the lower ram down to pull in the arms supporting the pressure band and force the veneer layup on the pressure band around the form. Then pressure from the side rams is applied.

The veneer assembly is held in place with bonding pressure set up by strap tension and ram pressure and is bonded with high frequency energy from a generator unit located beside the press. The purpose of the pressure strap is to contain the veneer during the molding operation much the same as a bending strap is used to support bending stock in steam bending of solid wood, so

Fig. 5. Rondo piano made by Jesse French & Sons Division of H. & A. Selmer, Inc. at New Castle, Ind., with electronic gluing equipment and new manufacturing procedure used to mold plywood components.

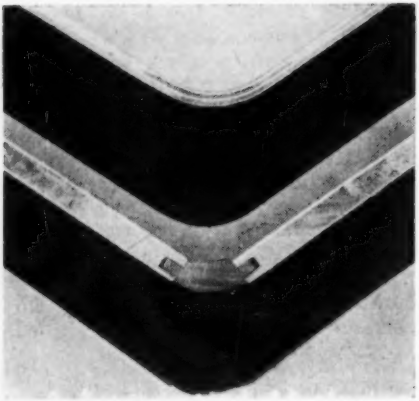

Fig. 6. Top center panel of Rondo piano produced by electronic gluing in one piece. Old top centerpanel shown at bottom illustrates assembly operation now eliminated.

there will be no tendency for the outer veneer to tear.

The W. W. Kimball Company of Chicago, Ill., have expanded their electronic gluing operations in the manufacture of pianos and to handle outside contracts and according to their president, W. W. Kimball, plan to go still further since they have found they can get better results in all except the very heaviest gluing operations and still save a considerable amount of time and labor as well. With a single exception, Kimball has made its own presses using compressed air for pressure. Three Thermex units are presently used to supply high frequency power.

This concern glues up grand piano rims, up to 13 plies, in curved jigs using compressed air for pressure and incorporating electrodes for electronic heating with power from an 8 kw. h.f. generator. The heating cycle varies from 20 to 30 minutes, depending upon the size of the rim and moisture conditions. Tone chamber panels for the smaller Kimball Conselette piano are laid up in 5 plies in special jigs with stainless steel cauls. Each caul carries two panels and the press takes two cauls at a time which are curved in about four minutes.

Another well known piano manufacturing concern, the Jesse French & Sons Division of H. & A. Selmer, Inc., also makes good use of electronic gluing equipment to speed up production of piano parts for their Rondo piano (Fig. 5) with a novel manufacturing procedure developed by vice-president Owen Parrish and production manager Harry N. Bedford. Multi-part assemblies have been replaced by single curved plywood members (Fig. 6) and electronic heating is now used instead of the old cold-pressing methods for fabricating curved plywood components — toe rails, grid moldings and top center and end columns in special molds, jigs and presses (Fig. 7).

Another leader in the musical instrument field, the Rudolph Wurlitzer Company of North Tonawanda, N. Y., employs electronic gluing equipment to shape and bond juke box rails made up of 5 plies, 17/64" thick, 2¼" wide and 58" long, molded to a radius of curvature of about 15-1/16". Two of these parts are used to make a complete rail and are formed of glue-spread plies laid up around a mold to make two identical pieces at one time.

The layup is made on separate rail fixtures on which thin flexible tinned copper straps are attached to pressure blocks to provide a continuous electrode on the outside. A similar strap is affixed to the inside of the form that overlaps the mold by about an inch, top and bottom, to prevent arcing to the glue line. After being loaded, the rail fixture is moved into a high frequency cage that is shielded with copper mesh screen and gate which closes and opens vertically. This gate must be closed to operate the limit switches and high frequency leads drop down from a shielded copper

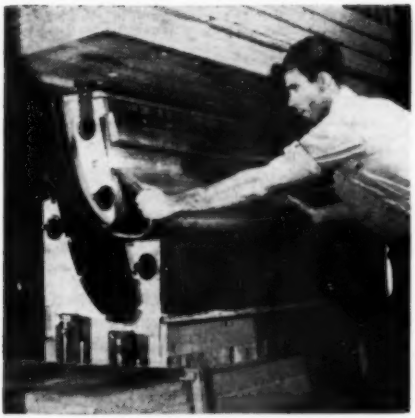

Fig. 7. Metal-clad molds are used in Francis hydraulic press to form curved plywood column for Rondo piano. Glue bond is set with high frequency energy from Model 89X0 Thermex unit at the right. Two-man operating crew is used—one to load and unload, the other to operate the press controls and high frequency unit.

transmission line for convenient contact with the electrodes. A Thermex 4 kw. unit cures these curved rails at a temperature of 190° to 200° F. in about two-and one-half minutes.

The Jasper Wood Products Company, custom manufacturers of plywood — flat and molded — probably have as many if not more electronic gluing operations in their plant at Jasper, Ind. as any other plant in the country and certainly change products and setups more often. It is unfortunate that due to the nature of their business, this concern has found it necessary to adopt a policy that calls for keeping developments of special products confidential until their customers have a chance to put them on the retail market where they then become public knowledge. As a primary example of their work, we might cite the Ford station wagon panels fabricated with complete durability for exterior exposure and hard usage.

Many electronic generator units are found in this plant of various capacities which are used for bonding all types of plywood in both standard presses and specially-built press units. Forms used here vary considerably in size, shape and application but all are designed by Jasper Wood Products Company to make the specific product required. Electronic gluing has been developed with long experience and much specialized knowledge and most molded plywood produced is made on the basis of a Jasper patent process, the exclusive Gramwood process.

While many very interesting products are still in the hush-hush stage, one of the now-it-can-be-told processes that is most unique and efficient is the production procedure used in the manufacture of plywood drums made for the U. S. Army Chemical Warfare Service. These drums were of 3-ply construction of sweet gum, with two 1/20" face ve-

Fig. 8. Guitar body panels are molded with metal-surfaced molds in a standard hydraulic press and bonded to permanent shape with h.f. power from a Thermatron generator at Fred Gretsch Co., Brooklyn, N. Y.

Fig. 9. Close-up of the loading operation for a serpentine shape.

neers and a 1/11" core veneer and were bonded in five minutes with high frequency heating.

These drums were formed into cylinders by a battery of plywood molding units, each having four drum molds or presses, serviced for high frequency heating by coaxial power lines running from a Thermex 15 A unit. Each mold consisted of two half sections lined with copper sheet and ground to form one electrode. These sections were adjustable to aid in loading and unloading and were protected by sheets of basswood to insulate them thermally to keep conduction and convection losses down.

In operation glue-spread veneer sheets were inserted into the sections moved apart to permit loading. A galvanized cylinder, 1/28" thick and divided vertically, was then inserted and a thin copper flap, mounted to swivel on top of each mold block, was brought into contact with the galvanized cylinder to position it properly. Finally a rubber pressure bag was dropped into the hollow center of the mold so that its wide mouth flange rested upon the top.

Using a counter-balance the lid was lowered until it rested firmly on the rubber flange at the mouth of the mold. It was first anchored by means of catches on either side; then it was squeezed down tightly by lever-operated eccentric cams. The pressure bag inside the cylinder was inflated by compressed air to expand the cylinder by inflated bag pressure to press the plywood sheets firmly and snugly into the mold to hold them securely in place. High frequency energy from the generator unit raised the temperature to about 150° F. by heat generated in the field between the copper lining of the mold and the galvanized cylinder electrodes. The same generator was used to apply high frequency heat to the three molding units in succession by means

Fig. 10. Fixture used in electronic press for bonding molding on switchboard panels — open ready for loading.

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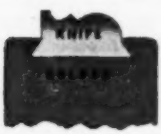

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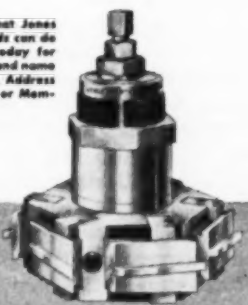

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Fig. 11. Applying molding to switchboard panels prior to bonding in special presses arranged for alternate feeding. One Model M-285, 5 kw. Thermonic dielectric generator powers both presses.

of a three-way transfer switch as the presses were loaded and unloaded. Lights on a control panel indicated which unit was receiving h.f. power. Each battery of presses was also equipped with a tuning stub to compensate for wide variations in material, moisture content and other variable factors.

The Fairchild Engine & Airplane Company used a rather unique curved plywood application in the manufacture of component aircraft parts at their plant in Burlington, Iowa. Bulkhead reinforcements which are applied where they join the skin of the fuselage have a high curvature. These are built up over curved forms of many thin plies and a special fixture is used which permits mechanical clamping to the glue-spread plies as they are laid up on the form. Aluminum foil electrodes are used on either side of the veneer pack for electronic heating with power from a 5 kw. radio frequency generator unit.

When these forms were first put into use considerable trouble was encountered in the form of arcing. This trouble was found to be due to the metal parts applied too close to the heating field. The form was changed using longer bolts and moving the inner bolt anchorages away from the part to be heated. Before electronic gluing equipment was used, this was a cold press operation taking 12 hours. It is now done in about 30 minutes.

The Glenwood Manufacturing Company at Burbank, Calif., has standardized electronic gluing procedure and equipment for mass production of curved and molded plywood. Some 18 special hydraulic presses are used in this work, all operated by means of aircraft-type hydraulic cylinders and a single 1000 lb. pump. High frequency generator units power the various presses in multiple service to cure plywood in loaded hydraulic presses while other presses are unloaded. The multi-cylinder hydraulic presses are equipped with built-up wooden dies, each of which incorporates a surface or curvature for a standard plywood molding. When a complete die has been assembled from these standardized wood forms , a sheet metal shield is stretched over the surfaces to serve as electrodes and to prevent adhesion of the plywood.

The International Diesel Electric Company of Long Island City, N. Y.,

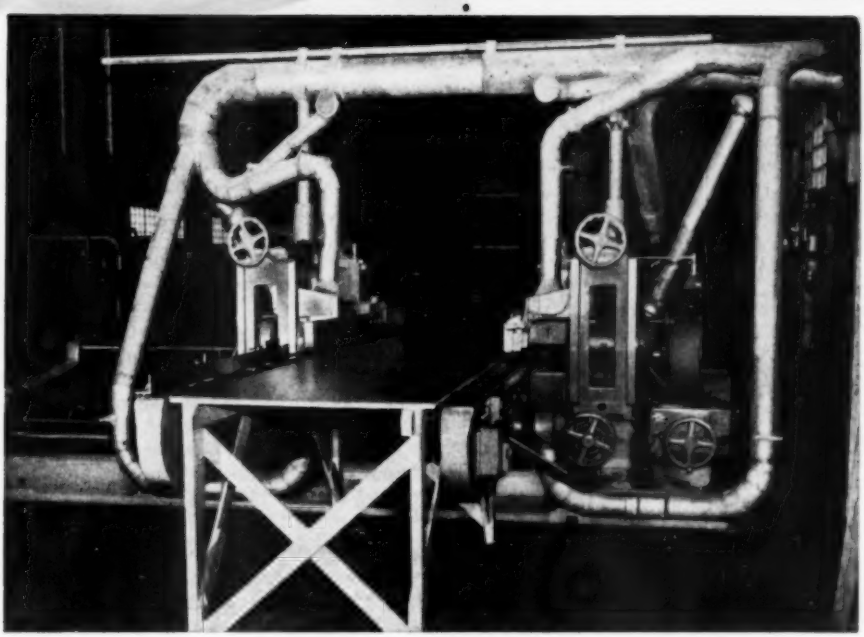

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Fig. 12. Press lid automatically springs open at end of curing cycle to permit unloading of completed switchboard panel with moldings permanently bonded in place. Air cylinder returns panel to original loading position to aid in removal and reloading.

uses a unique electronic press to mold television cabinet shells. These shells are 7-ply, up to 30" high and 26" deep. The press is designed somewhat similar to the double-arm bender used in solid wood steam bending. The veneer layup is formed over a solid form in the base of the machine, with its metal surface serving as one of the electrodes. A metal strap connected to the two arms wraps the veneer about the form and serves as the other electrode. A small high frequency generator furnishes power to bond the shell into permanent shape in about three minutes.

Electronic bending is a feature of ukelele and guitar production at the woodworking department of Fred Gretsch Company, Brooklyn, N. Y. Metal-surfaced wooden forms with rigid male and female molds are used in a standard hydraulic press to shape 3-ply instrument panels and a Thermatron generator supplies high frequency current to dry the glue and shape the part permanently in a single operation. The maximum cure cycle is only 30 seconds (Fig. 8).

Much of the curved plywood molded in forming presses and bonded by electronic heating is produced in multiple formation for mass production of plywood parts. At a furniture plant where this method is used in the production of serpentine drawer fronts with mahogany and walnut face veneer, the panel molded is of sufficient size to make up four drawer fronts. A three-man crew serves to spread the glue, lay-up and press, and rip finished panels into individual drawer front sizes. The operating cycle is about five minutes and three panels are produced at each cycle, or 12 drawer fronts. The average production of this electronic gluing job is about 200 panels, or 800 drawer fronts per 8-hour day, including setup time and press service as well as ripping.

Edge Banding and Cleating

Before leaving the field of plywood applications it might be well to treat briefly electronic gluing of veneer edge bands or solid wood edge cleats to the edges of plywood using the same species as is used in the face veneers to match them up properly in the finished product—as in case, desk and table tops. Veneer edge bands are used only where the edges are to remain square, but

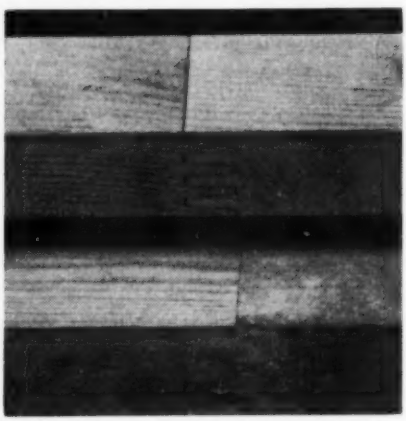

Fig. 13. Finger jointed material has finger length for good wood strength at base of joint.

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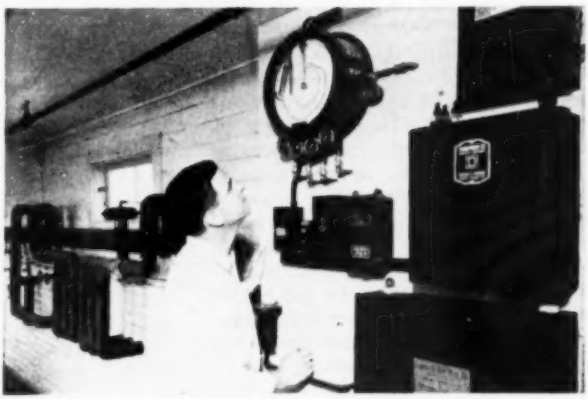

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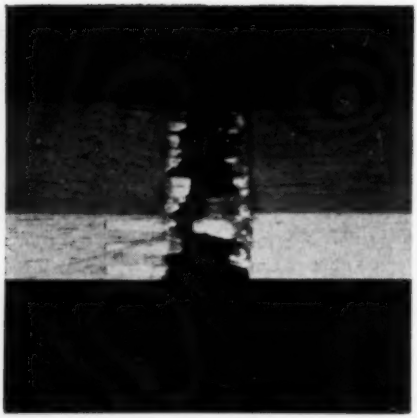


Fig. 14. Specimens pulled at joint show complete wood failure showing the joint is stronger than the wood itself.

solid wood edge cleats permit the edges to be molded or shaped as required.

Resistance heating is more generally used for the application of veneer edge bands, but electronic gluing equipment is also used to some extent and is generally preferred for the application of edge cleats, either flat or machined to fit slots machined into the plywood edges. This equipment is available commercially for single panel or multiple applications but seems to be more generally made specially for the job by the user-plant or by a commercial equipment concern retained to engineer the job and build the equipment.

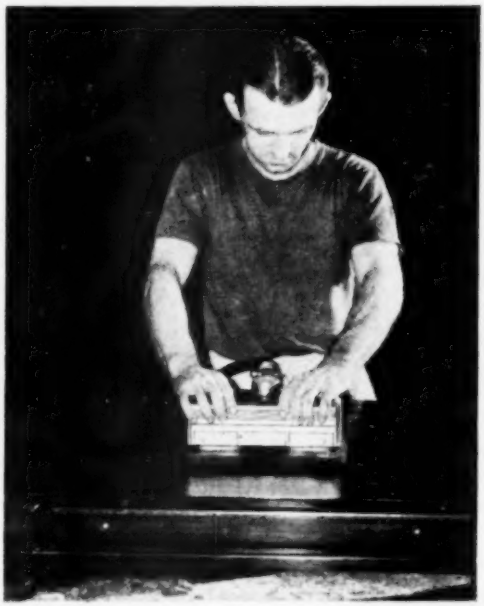
Pressure is applied usually by hydraulic or mechanical mechanism but some edge banding presses studied are using inflated hose pressure to apply edge bands, with the hose mounted permanently in the press bed. As compressed air is applied, the hose swells up, moving the electrode strip into engagement with the edge band assembly to bond it with high frequency energy. Although the pressure produced is not very high, it is ample to set the glue line when high frequency is used as the reactive medium.

Woodwelding, Inc. has designed and built a self-expanding edge bander for furniture and store fixture applications which features a special carbon-free high dielectric rubber with stray field electrodes incorporated to provide the self-expanding edge banding electrode. This is a half-hose with the wide diameter closed with a high dielectric rubber face and electrodes evenly spaced and imbedded into the rubber of the face. It is said to be able to apply veneer edge banding to any radii—the veneer will bend around without breaking. A Model FCT-5000 Woodwelder generator unit is used to cure the bond.

In operation compressed air pressure applied to the hose and expanding electrode forces the edge banding veneer against the plywood edge where it is held until cured. Each inflation cycle applies veneer to two sides or two ends of the plywood edge at one time. Curing is a matter of seconds after power from the high frequency unit is applied. To suit different material thicknesses, electrode widths supplied with standard models of the edge bander are 2 1/2" and 4" .

While air pressure is also used in the Raybond veneer edge-banding press, the application is quite different. Recently developed by the Electronic Heating Corporation, this is a vertical press which is open on both sides for easy handling of the work. Banding and bonding pressure is provided by a series of air cylinders mounted at the lower edge of the press in straight alignment. Special templates are provided for banding curved edges. The smaller Raybond generator units are used with this press and the press is said to permit single and multiple gluing of edge veneers up to a maximum panel capacity of 72" square.

All of the specially-built edge banding or cleating machines use standard makes of high frequency generators, usually of 1 kw. or 2 kw. capacity.



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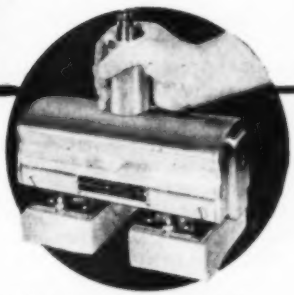

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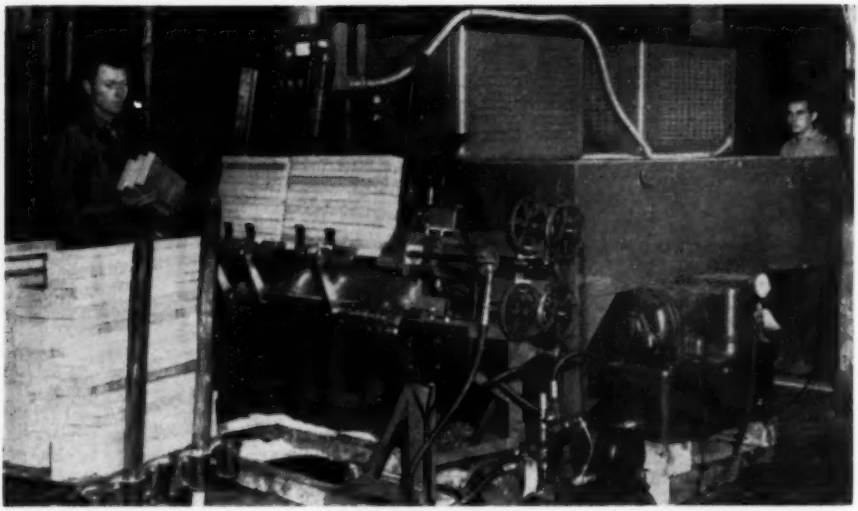

Fig. 15. New radio frequency Bilt-Well electronic end gluer at Carr, Adams & Collier plant in Dubuque, Iowa, averages 4,000 pieces in an 8-hour day. Thermex 5 kw. h.f. unit powers machine.

Press arrangements are either horizontal or vertical and pressure devices usually operate with one fixed member. Most of these machines use conventional electrode arrangement.

A novel electronic edge bander designed for multiple banding was observed in a large furniture plant in the Midwest. The pressure device consisted of a fixed and a movable plate, and the latter was moved into position to apply pressure by a worm screw drive. Each plate mounted a stray field electrode arrangement face by a light metal contact sheet to prevent damage to the veneer. From 10 to 12 panels could be banded at one time at this machine.

In operation, plywood panels to be edge banded were stacked up on the press bed with uniform thickness spacers between them. Two sheets of veneer were then spread with glue on one side and applied to opposite sides of the stack, with the grain of the veneer sheets running vertically. The movable plate was advanced against the stack to provide sufficient bonding pressure against the fixed plate and high frequency power from a 2 kw. generator unit was controlled by a micro-switch pre-set to work with the movement of the pressure plate. After the stack was cured, it was removed and a small portable power saw was used to saw the panels apart, using a guide set the proper distance from panel to panel and allowing sufficient overhang for subsequent trimming at the router.

At a desk plant where a special edge banding machine was used to band desk tops, the panel was centered in the jig by locating stops which held it away from electrodes imbedded in a fiber laminate acting as a pressure shoe on the veneer banding. Glue-spread banding was slid into position between the electrodes and panel edge, also located by stops. Pressure was provided by inflating with compressed air a section of fire hose located behind the pressure shoe. A portable 3500 watt Wood-

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welder generator supplied high frequency power for curing. The jig was supplied with a foot-kick lever to aid in unloading the press after the cure had been completed and pressure had been withdrawn.

A unique electronic edge bander was designed and built at the Drexel Furniture Company plant at Drexel, N. C., for use in edge banding and cleating. This is a horizontal press, capable of multiple banding and adjustable to handle various sizes of material. Bed base rails, for example, are banded back to back in pairs.

An aluminum sheet placed upon the bed of the press serves as one electrode and the top electrode bar is fastened to the shielded top section used to minimize radiation. More than one top electrode is used for multiple banding. One side of the press is adjustable and carries the air cylinder which clamps the veneers or cleats to the piece tightly together against the rigid side of the press. The top section is lowered to allow the top electrode to contact the assembly to complete the high frequency circuit when the generator unit is turned on. The average curing cycle per press load is about 35 seconds.

A special electronic cleat machine used at the John Widdicomb plant in Grand Rapids, Mich. consists of a vertical press in which panel and cleat are placed in proper relationship to each other. Air cylinders with a travel of about 3 1/2" located at the top of the press apply pressure at the edge to hold the panel tightly against the cleat. A series of electrodes behind the cleat in the bottom edge of the press set the glue bond is less than a minute. It is powered by a 3500 watt Woodwelder unit. The bottom edge is also adjustable to various widths of panels.

The Cavalier Corporation of Chattanooga, Tenn., built their machine for electronic edge banding in the form of a horizontal press, using air clamps to press the veneer against the panel edge and a Thermex generator unit to furnish high frequency energy. The circuit for electronic heating is provided by T-shaped copper electrodes, one fixed in the press bed and the other placed along the glue joint. This machine is made up of two identical units for alternate curing process, which takes 20 seconds, loading and unloading one section while the other is curing.

A somewhat different application although employing a similar method of operation is the electronic gluing of molding on wooden panels. Although the spot welding high frequency gun is used somewhat in this application, various types of special equipment have been developed to suit this operation to mass production methods.

One of the most interesting observed involved bonding resorcinol and urea glued moldings on switchboard panels. The equipment was designed and built by the Induction Heating Corporation of Brooklyn, N. Y. Two presses were fed from one Thermonic 5 kw. generator and used strip electrodes for bonding. The tables were fed alternately and production was one completed panel per minute. The operation was simple and efficient. Boards were placed in position in the table jig and lowered by an air cylinder. When the board was properly positioned the side clamps applied pressure closing the lid and actually started the heating cycle. The heating cycle was automatically controlled, but a manual start-stop control was provided for testing purposes (Figs. 10, 11 and 12).

Scarf Gluing or End Gluing

The process of scarf gluing or end gluing for better utilization of short lengths of lumber, improving grade with clear lengths, or to provide lengths longer than is possible with standard lumber

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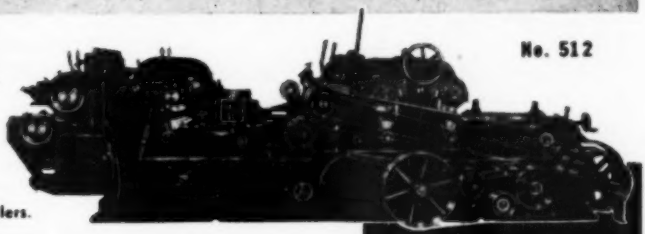
Newman

No. 512



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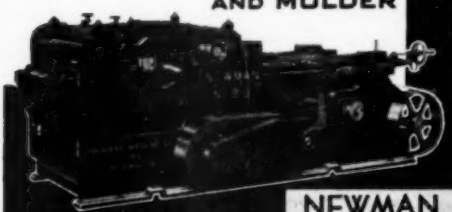

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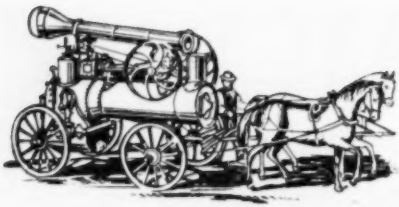

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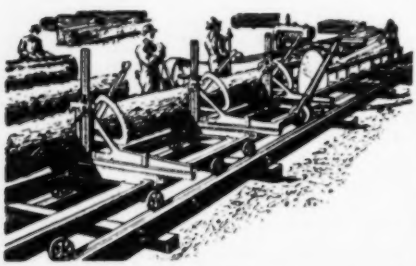

Frick Sawmills have enjoyed continued preference since 1875.

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lengths has become economical and efficient as well as a profitable operation with the use of electronic gluing equipment.

The type of scarf or splice used is usually determined by joint strength and appearance requirements of the end product. Standard joint types include the straight scarf, Z and finger joints. The scarf joint has very good strength, but wastes considerable material and its feather edge sometimes makes it difficult to handle. It is produced, however, on simple equipment with little precision machining being required. The Z and finger joints require more precise preparation with special cutters but are much more pleasing in finished appearance. The finger joint is the stronger of the two. In fact, the Z joint is principally used for end joining members which will subsequently be edge glued or glued to a panel for further support.

The chief requirement of the scarf joint is flatness. It is used mainly in lamination operations for the production of construction timbers, trusses and boat work. Special electronic presses are seldom used as clamping over long lengths is required, but standard high frequency generator units are used for bonding with metal strips inserted beneath clamping devices serving as electrodes. Urea glues are commonly used in this application as color of joint is seldom a determining consideration. Resorcinol glues are also used for exterior applications.

End gluing with electronic gluing equipment has made it possible to produce plywood panels to any desired length, with 10 and 12-foot panels regarded as regular standard production items. The Columbia Veneer Company at Kalama, Wash., uses a Mann-Russell high frequency press unit for this purpose. Plywood panels are scarfed at the ends and glue is spread on the joints, which are then tacked to hold in place

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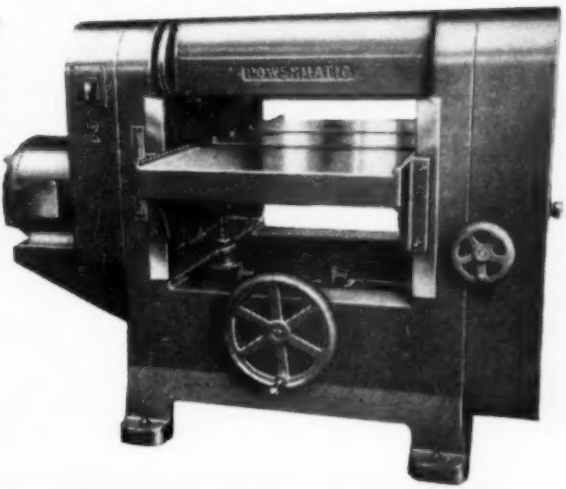

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for the electronic press operation. The joint is held in the press for curing with an air hold and the bond is cured in 45 seconds. This process allows from 200 to 250 panels in 10 and 12-foot lengths to be produced per shift.

The electronic finger jointing process is also used in the plywood department of Western Cooperage, Inc. at Portland, Oregon, for the continuous gluing of panel sides and ends to be cut to desired lengths with a one-inch reversible finger joint which is cut the same on all panels at the shaper. In joining the panels one face is reversed to the next so that joint fits into the preceding panel joint. Joints are glued by pushing each panel across power glue rolls and grooved rollers spread glue to full depth of the one-inch joint sections.

In the press operation three air cylinders press a bar against the panel to force the joints firmly together under pressure of about 80 p.s.i. An air brake on the reverse side of the press forces a flat bar onto the panel to hold it in place against the pressure of the air-operated pushing bar. While the panels are held in position with the joint under the pressure bar, a hand-activated lever brings the pressure bar down on the panels under air pressure. A Woodwelder 5kw. electronic unit sets the bond in 25 seconds. The continuous panels are cut to desired lengths as they emerge from the press with a portable hand power saw mounted in a guide on the off-bear table.

A simple heavy duty portable electronic press was used for end gluing of scarf joints at a construction timber and truss mill. It incorporated a lifting device for work contact as the work was traveled down the length of a laminated timber to bond the joints. Bonding time of a laminated timber 6" x 6" x 16' was only 10 minutes. High frequency energy was supplied with an RCA electronic power generator.

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One of the most interesting end gluing studies made was at the plant of Carr, Adams & Collier Company in Dubuque, Iowa, manufacturers of Bilt-Well Woodstock. This concern uses an electronic end gluing process with a radio frequency electronic end gluer, said to be the first such machine ever developed, and melamine-resin glue to glue up short stock as a practical means of utilization. A finger-jointed material, with finger length adequate to develop good wood strength at the base of the joint, has resulted which has been found to be most suitable for millwork applications under severest weather conditions. Some end products of this process include welded wood shelving, drawer sides, door rails, wood casing, jamb and wind break.

Their original project was gluing up short stock from offal for stile and rail production in their door department. Resorcinol glue was first used with satisfactory results on untreated Ponderosa pine, with specimens showing firm joints after 18 months of exposure on outside weathering racks. When these specimens were pulled at the joint, they showed complete wood failure indicating that the joint was stronger than wood itself (Fig. 11).

Due to objections raised to the darker color of the resorcinol glue line under light finishes, it was decided to use a melamine-resin glue which was very durable, had required waterproof properties, and showed a colorless glue line. It then became neccessary to develop adequate electronic equipment to facilitate the use of this glue. This development was the new radio frequency electronic end gluer designed and developed jointly by Carr, Adams & Collier engineers and engineers of the Girdler Corporation, who furnished the high frequency unit.

This electronic end gluer (Fig. 12)

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operates at the rate of 20 to 40 joints per minute as the joint is forced together by hydraulic cylinder and travels in a continuous line through the machine under a five-foot electrode. Speed of travel under this electrode varies according to the width of the piece from approximately 50 to 76 inches per minute. The finger-jointed stock is joined together by horizontal and vertical pressure and traveled through the high frequency field with the curing cycle dependent upon the number of joints per minute (20 to 40). A hopper feed permits short pieces of stock to be fed continuously into the machine. Production of normal end-glued work is said to average 4,000 pieces per 8-hour day. A Thermex 5 kw. generator furnished high frequency power for this unit.

This discussion of finger joints glued together with electronic equipment would not be complete without mention of Ford's methods even though some might be regarded as assembly operations. In the main this operation consisted of joining two pieces by finger joints to make the upper curved members of window frames. Two Ford presses were used with a 12-1/2 kw. Thermex unit serving the presses for alternate curing. One press made joints for door windows and the other for quarter windows and 10 finger joints were made at a time in each press cycle —half for either right or left hand.

If the joints contained both end and flat grain, the joints were first given a thin priming coat of glue before the regular glue spread to provide a uniform bonding coat. Special jigs consisting of a bottom jig, made of steel with a strip of fiber in the center for heat insulation, and a top hardwood pressure member operated by hydraulic cylinders were used in these presses. Parts to be bonded were put in the bottom

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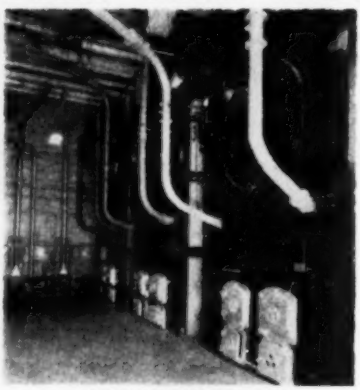

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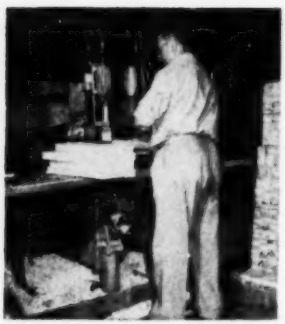
jig on a cold electrode which covered the fiber strip and was grounded to the steel jig. They were positioned by stops and the fingers were closed by strong screw pressure. A thin rubber cushion (about 1/2") was placed to the bottom of the top pressure member and a sheet copper hot electrode was placed over this cushion to rest directly on the finger joints when the press was closed. Fresh paper strips were placed between the electrodes and joints for every press cycle to prevent the glue from sticking to either the jigs or electrodes. Curing cycles were about 4 1/2 minutes with continuous rather than intermittent application of high frequency energy.

Nothing is more dangerous to good government than great power in improper hands.—**Calvin Coolidge.**

Dearborn builds this chair in just 35 minutes!



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THIS Bell "300" Electronic Gluer enables two men to glue all Badger's panels. High productivity per man is due to the fact that the "300" is completely automatic.

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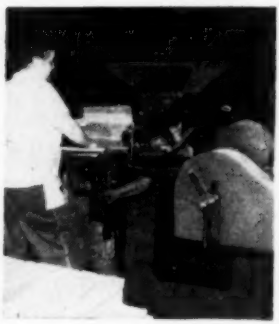

24 DOWELS are driven in 7/10 of one minute—each one with just the *right* amount of *hot* glue. Result: better joints, less clean-up with Bell's No. 8 Gluer and Dowel Driver.

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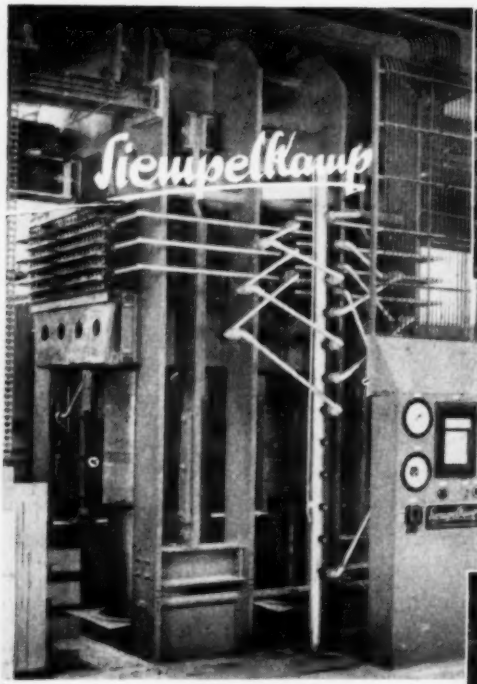

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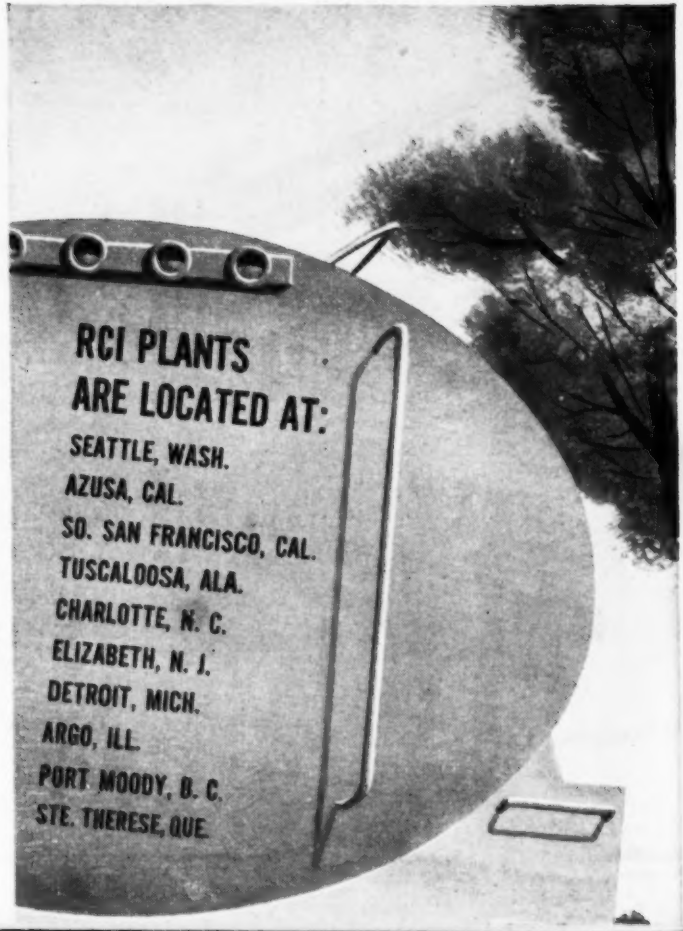

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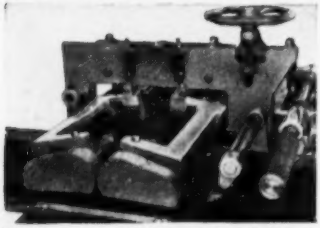
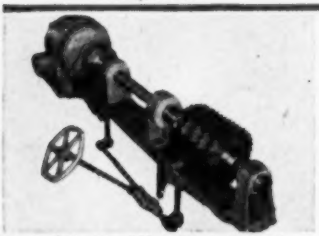


Double spur roll short stock attachment, showing handwheel for easy unit vertical adjustment.



Heart of the No. 441 is the exclusive beam mounting of motor, arbor and bearings as a one-piece, rigid unit.

Power — Speed — Accuracy best describe the Mereen-Johnson No. 441 Gang Rip Saw. That it's in a heavy duty class by itself can best be demonstrated by the fact that *these machines are being operated with 125 HP on the arbor, making 22 cuts in 8-quarter gum at 100 F.P.M.*

A combination of features make the No. 441 adaptable to a wide variety of gang ripping operations. For *wirebound boxes* it will rip very short cleats at maximum production speeds while maintaining utmost accuracy . . . For *furniture core stock* and core banding strips, the No. 441 is used as a straight line gang rip saw . . . For *hardwood flooring*, the machine runs as a rough ripper ahead of the matcher, or it can be used as a smooth straight line ripper producing strip flooring . . . *Sheet materials* as insulation board, hardboard and plastic laminates are rapidly turned out when No. 441 machines with 19" or 24" arbors are used.

The one-piece arbor beam is an exclusive M-J feature. The table is stationary and the arbor is vertically adjustable. Arbor spacings offered include 12", 19" and 24". Thicknesses can vary from ¼" to 4".

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PROPERTY HANDLING Affects Your . . . INCOME TAX

By B. L. Gough

WHEN and how does what you own qualify as an income tax deduction? Here are a number of questions about property-and-income tax that the owners of woodworking shops frequently ask, and authoritative answers:

Q. Can I depreciate all of the property the company owns?

A. Yes, on the books you keep for yourself if you wish to. On bookkeeping for Uncle Sam's tax men, you cannot.

The land on which your buildings stand cannot be depreciated. Land does not wear out and, unless it should be actually sold at a lower figure than the amount which was paid for it, it does not lose in value. (In the event of a sale of land for a real dollar loss, the loss may be deducted as either a long-term or a short-term loss, depending upon whether it had been held for less, or longer, than six months.)

However, the improvements to the land depreciate in value. These are the things which man made and placed upon the land.

Moreover, any other property which has a useful life of one year or longer may be depreciated. If it's a mere supply item designed to be used and then discarded, or another thing which lasts less than a year before becoming worn out, its cost may be charged off directly as an operating cost.

Q. Over how long a time may the cost of various depreciable items of plant property be amortized?

A. That depends upon what each is. The Bureau of Internal Revenue issues a "green book" of probable useful lives. The figures in this book are, of course, only "average" figures which apply to most operations. The governing factor in figuring out how long to carry depreciation on an item is the actual useful life of the property. Here are a few of the average figures suggested by the Treasury's men:

Basket machinery	14 years
Bending machines	20 years
Blowers	15 years
Boring machines	20 years
Bowing machines	20 years
Buggies, lumber	13 years
Burners, refuse	20 years
Carriages for resaw	18 years
Carriers, lumber	17 years
Chippers	17 years
Chucking machines	18 years
Cleating machines	10 years
Coilers, hoop	14 years
Clippers for veneering	20 years
Conveyors, lumber, slab, & sawdust	20 years
Crate machines	17 years
Cylinders, creosoting	20 years
Dado machines	18 years
Dovetailing machines	20 years
Dowel making and setting machines	17 years
Edgers	18 years
Filing machines	17 years
Flooring machines	20 years
Hogs	14 years
Hoists and cranes	20 years
Jointers	20 years
Kilns, dry	20 years
Lathes	20 years
Mill machines, shingle	20 years
Mitering machines	17 years
Molders	20 years
Mortisers	20 years
Nailing machines	20 years

Planers, woodwork	20 years
Presses	20 years
Reamers	18 years
Sanders	16 years
Saw frames	18 years
Setting-up forms, cooperage	20 years
Shapers	20 years
Stretchers, hand saw	18 years
Tapering machines	20 years
Tenoning machines	20 years
Tongue and groove machines (staves)	20 years
Trimmers, box	18 years

Q. We were slapped with a paving lien last year. May I take off this tax?

A. The Bureau of Internal Revenue says: "Taxes for local benefits such as assessments for streets, sidewalks and the like, which tend to enhance the value of the property, should be capitalized." In other words—carry the cost on your depreciation records.

Q. An outbuilding where supplies were stored burned to the ground with all its contents. Can we claim it as a loss?

A. Certainly. However, there is a "but" attached to this go-ahead. It hinges around how much of the loss your insurance company made good.

Let's say that the outbuilding was worth $5,000.00, and its contents another $2,000.00. Insurance fully covered both, and the insurance company sent a check to you promptly. You have then actually suffered no loss in money — Uncle Sam doesn't count headaches or lost motion making up for the damage — and so you cannot claim a loss here.

Suppose, though, that only the building was insured, and for merely $4,000. You had a net casualty loss, then, of $1,000 on the building, plus $2,000 on the contents. You can claim full tax deduction for this $3,000 business loss.

In other words, it works this way: The loss may be claimed only to the extent that insurance did not repay the money. If your plant had no insurance, claim all the loss. If insurance partially covered the loss, claim only the net loss. If insurance paid off to the tune of the full fire loss, you cannot claim a deduction on your income tax return.

Q. Would that work the same way for storm damage?

A. It would. You can claim any casualty or accident loss only to the extent that it was not made good by an insurance company pay-off.

Q. What happens when the insurance pays MORE than the cost? In my case, a building that had cost $10,000 to erect in 1940 burned down. It was insured for the present replacement value—$15,000—and the insurance company paid me in full. Do we have to pay tax on that paper "profit" of $5,000?

A. That depends. Did the company spend $15,000 immediately to buy or build another structure to be used for the same purpose? If it did, then the paper gain is not taxable, since it went for replacement of the loss with a similar facility. But if the money was spent for something else, then Uncle Sam wants his tax share of the "gain" on the fire.

To illustrate how this works, let us consider another case. Joe Jones' building cost $5000 to put up back in 1935, but Joe knew it couldn't be duplicated for anything close to that in today's mobilization economy, so he insured it for $11,000. Then, in 1950, a windstorm of hurricane proportions demolished the structure. Joe's insurance agent handed him a check for $11,000 the next week.

Joe then put men to work to put up a new building on the site of his old one. When he had paid all the bills for it, he found that he had spent $7500. He had a "profit" left over of $3500, out of his paper gain of $6000 on the fire.

Uncle Sam did not demand tax on the full $6000. Since the insurance

money had been spent for another building like his old one, any part of the extra money that went for this purpose was tax free. However, explained the Collector of Internal Revenue, the $3500 over and above necessary expenses to replace the building had to be reported on the tax return.

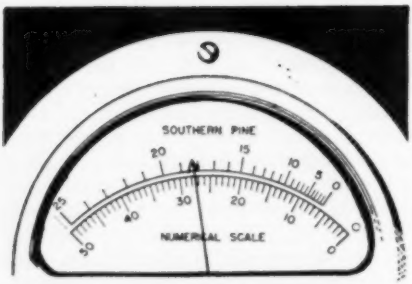
Q. What sort of bookkeeping does the Treasury demand in computing depreciation on longer-than-a-year-of-useful-life property?

A. The Treasury does not demand any special method. But the way you do it must conform to some established accounting practice, and it must be consistent. It cannot be on one basis this year, another basis next year. Says the Bureau of Internal Revenue on the subject:

"The capital sum to be replaced by allowances for depreciation over the useful life of the property may either be deducted in equal annual instalments or in accordance with any other recognized trade practice, such as apportionment to units of production. While no specific method is prescribed, whatever plan or method of apportionment is adopted must be reasonable and cannot be changed in a later year without the consent of the Commissioner. The methods in general use by taxpayers are the "straight-line" and the "unit of production," the latter being used for the most part by taxpayers owning natural resource property. These, with other methods used to a lesser extent, are described below.

"Under the straight-line method, the cost or other basis is limited by sources of supply. However, uncertain and unpredictable factors arise to such an extent as to make application of the method very difficult, if not impossible. Use of the method must be confined to those items in the property account whose useful lives are determined by the factors of wear and tear or where the extent of use or the rate of production measures the rate of exhaustion of the property. When such a separation can be made, it is then necessary to forecast for those items the useful lives which are controlled by extent of use of the total number of units to be produced during their useful lives, in order to obtain a cost factor to be applied against units produced each year in arriving at the depreciation allowance. For most property it is not possible to obtain this information with any reasonable degree of accuracy and, therefore, the method is not considered an acceptable one for general application to the machinery account of industrial concerns, or to the property of those companies exploiting a natural resource with reserves sufficient to extend operations beyond the physical life of the original plant.

"Under the declining balance method the amount of depreciation is subtracted annually from the cost or other basis of the property and the rate applied only to the resulting balances. Depreciation on any single item is largest in amount the first year and declines each year thereafter. This method gives satisfactory results for accounts that are being constantly replaced in substantially equal amounts, provided the rate used is somewhat higher than that applicable under the straight-line method. Its best application is to those accounts for property in which the greater proportion of the production is confined to the early part of the useful life. Property, less its estimated salvage value, is deducted in equal annual installments over the period of its estimated useful life. Ordinarily, the depreciation deduction is computed by applying a depreciation rate expressed as a percentage to the cost or other basis to be recovered, but it also may be computed by divid-



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ing that cost or other basis by the estimated useful life. The estimated useful life is subject to modification in the light of conditions known to exist at the end of each taxable period. Ordinarily, depreciation computed by this method represents the actual diminuation in service value from year to year as closely as the depreciation computed by any other method. The practical simplicity in accounting records required and the ease and facility by which revisions or changing life estimates may be applied tend to make this method the most acceptable one for general use.

"Unit of production method is peculiarly applicable in determining depreciation for property used in the exploitation of natural resources, such as mineral deposits or timber, the available reserves of which limit the useful life of the depreciable property. Under such circumstances, the rate of exhaustion of the natural resource measures the useful life of the physical property. By dividing the cost or other basis less estimated salvage value by the estimated available reserves of raw material a unit cost is obtained which, when multiplied by the units produced during a given year, gives the depreciation sustained for that year. Depreciation, at least to the extent of that based upon decay and normal obsolescence, is allowable and should be deducted during the period when property is idle or is producing at a rate below normal.

"In the case of depreciable property the useful life of which is not installation, the cost of the item removed (adjusted for salvage, if any) should be charged to the depreciation reserve. As a practical matter, it is permissible to charge the cost of rehabilitations or small replacements directly to the depreciation reserve, leaving the capital account undisturbed, provided there has been no material change in price

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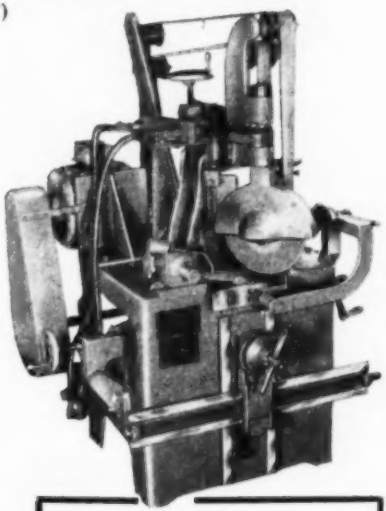

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levels and no substantial improvement in the new equipment. Replacements in the nature of betterments, however, should always be added to the depreciable asset account.

"The cost of incidental repairs which neither materially add to the value of the property nor appreciably prolong its life, but merely keep it in an ordinarily efficient operating condition, may be deducted as expense items."

Q. And what happens when we sell, dismantle or junk an item of depreciable property?

A. This, in his best "federalese," is what Uncle Sam advises:

"Salvage value is the amount realizable from the sale or other disposition of items recovered when property has become no longer useful in the taxpayer's business and is demolished, dismantled, or retired from service. When reduced by the cost of demolishing, dismantling, and removal, it is referred to as net salvage. In principle, the estimated net salvage should serve to reduce depreciation, either through a reduction in the basis on which depreciation is computed or a reduction in the rate. In either instance the amount of net salvage should actually, or in effect, be a credit to the depreciation reserve. Where the basis or rate for depreciation is not reduced for estimated salvage, all net receipts from salvage should be considered income."

"In retirement accounting for depreciable property, the cost of property retired each year is credited to the capital asset account and, less net salvage (actual or estimated), charged to expense in lieu of annual provisions for depreciation. When property acquired prior to March 1, 1913, is retired, the cost should be reduced to the extent of the depreciation sustained to March 1, 1913, in arriving at the proper deduction.

"While this method results in the ultimate recovery of the total investment in depreciable property and tends to approximate straight-line depreciation over a period of years, there may be considerable fluctuation in the amount of the deduction from year to year due to the retirement of unusually large and expensive units in some years. This distortion can be avoided to some extent by anticipating the retirement of such units when the year of retirement can be predicted with reasonable accuracy and spreading the cost or other basis less estimated salvage over the estimated remaining useful life."

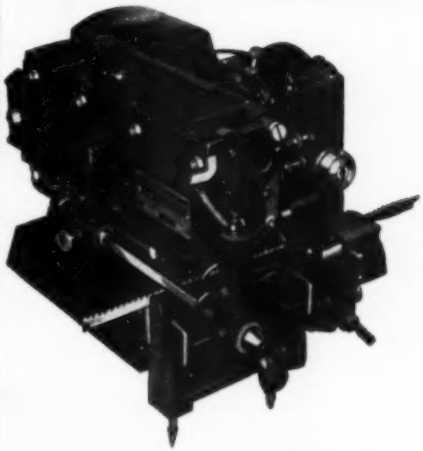
Q. What happens to the charge-off for depreciation when improvements are made to the property?

A. Here is the official word from the Treasury:

"Amounts spent in restoring property or in making good the exhaustion thereof, for which an allowance is or has been made, or amounts spent for replacements which arrest deterioration and appreciably prolong the life of the property, are capital expenditures and, strictly speaking, should be accounted for by deducting from the asset account the cost of the item or part thereof which is replaced, and adding to the capital account the cost of the new part.

Q. How can I tell which maintenance costs are considered repairs for tax purposes and which must be depreciated over several years?

A. There is a simple yardstick which can help you. The yardstick takes the form of a question—"Does this add to the value of the property, or merely protect and maintain it?" If the improvement actually makes the building worth more money, then it must be depreciated. If it protects, cleans, merely maintains, then it is a repair or maintenance expense, and may be charged directly against the year's receipts on the income tax returns.



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American WOODS

By reader request we are continuing the listing of American woods which we began in our Directory Issue (October).

We plan to continue this listing until we have covered all of the most popular woods. Then the entire series will be reprinted in booklet form for those wishing copies. Let us hear from you if you wish us to reserve a copy in your name.

PIGNUT HICKORY

Most Shock-resistant Wood

Carya glabra, (MILLER) SWEET

Habitat—On dry ridges and open pastures in woodlands and fertile coves from Vermont to Michigan and south through Illinois to the highlands of Mississippi, Alabama and Georgia, pignut hickory trees rear their compact, narrow oblong crowns and scatter disappointing nuts.

Growth and Appearance—The early settlers in this country gave the tree the name of "pignut" because they considered the nuts fit only for pigs to eat. As a rule the tree grows 50 to 100 feet high with trunk diameters up to 3 feet. The tree matures at from 300 to 400 years.

Availability and Use—The wood is close-grained, light brown to creamy white, hard, tough and resilient. This is the heaviest of all hickories. It is unequalled in shock-resisting qualities. Because of these qualities it is used for tool handles and athletic equipment. The best hickory shows an oily or glossy side grain when smoothly finished and gives a clear ringing tone when dropped on end on a hard surface.

There is some controversy among buyers of pignut hickory as to the relative value of white sapwood over darker colored heartwood. Special value is often given wide-ringed white wood over second growth stump sprouts. Weight for weight, however, shows sound hickory has the same strength, toughness and resistance to shock regardless of whether it is red heartwood or white sapwood or a mixture of both.

RED ALDER

Nature's Reforestation Assistant

Alnus rubra, BONG

Habitat—The most important of six alders found in the U.S., it grows on the West Coast—from Alaska to central California. If soil and moisture are adequate alder will take over after old growth forests are removed by logging, fire or other causes. Relatively short-lived, it gives way to more enduring cone-bearing trees. Meanwhile it serves to enrich those areas and provides a nurse crop under the protection of which more valuable trees get started. It is a useful silvicultural tool. Comparatively fire-resistant, it is planted for firebreaks where new crops of Douglas fir, hemlock, cedar or spruce are desired.

Growth and Appearance—Occurs in groups or a dense grove along water courses; grows 100 to 130 feet tall and matures in 50 years. The leaves are smooth and deep yellowish-green. They shed early in autumn. Male and female

flowers grow in tassel-like clusters on the same tree. The bark is smooth, mottled gray to white on large trees. It cracks into square-cornered segments.

Availability and Use—Approximately 2½ billion board feet are now standing. The annual cut is about 23 million board feet. The wood is close textured, straight grained, fairly soft and workable. It is moderately strong and holds paint and enamel well and glues easily. It is used extensively for furniture manufacture and also for carved novelties such as wooden shoes, salad sets, book ends and wooden-soled sport shoes.

RIVER BIRCH or RED BIRCH

Erosion Protection

Betula nigra, LINNAEUS

Habitat—This is one of those species of trees that have more value, in many areas, as a growing tree. It is very well adapted to holding the soil when planted along the banks of streams. This birch, as the name implies, grows along the banks of rivers, ponds and streams throughout the eastern third of the country.

Growth and Appearance—It grows to a height of 50 to 80 feet, with a trunk diameter of 2 to 3 feet. Under particularly favorable conditions it may grow up to 100 feet in height. The cinnamon red bark probably gives rise to the name red birch. Some of the other names used to describe this birch include water, blue and black. Throughout the world there are more than 30 species of birch; of these 12 are native to North America.

Availability and Use—River birch's commercial value is strictly local. It is used for making furniture of cheaper grades, berry baskets, basket hoops, rice casks and shoe lasts. Because of its graceful form it is well suited for ornamental purposes and is often used in park plantings.

SASSAFRAS

Flavoring for Candy and Medicine.

Sassafras albidum, (NUTTALL) NEES

Habitat—This broad, irregularly flat-topped tree is found from Maine to Michigan and Kansas, south to Florida and Texas.

Growth and Appearance—Little more than a shrub in the north, the tree reaches heights of 40 to 90 feet and trunk diameters of from 4 to 7 feet from Pennsylvania on south. The largest trees are reported to grow in the deeper soils of the Smoky Mountains of North Carolina and Tennessee. It grows moderately rapidly and may live for 700 to 1000 years. As quite infrequently happens, sassafras is another of the trees having leaves of different shape on the same tree. Some of the leaves are plain and oval, some have a single lobe and at times there are leaves with three lobes.

Availability and Use—The wood of the sassafras is tinged with red with seven or more rings of light yellow sapwood; darker shades develop when the tree has reached 15 to 18 inches in diameter. Not very strong, the wood is soft, brittle, coarse-grained and slightly aromatic. It is popular for use as fence posts, split rails, sills for rural homes and light boats. There is little of it sold as the merchantable supply is limited.

When this country was first settled the sources for medicines included the roots and bark of the sassafras. In those days it constituted an important export, the early colonists sending boat loads of it back to England. Sassafras "tea" has long been, and still is, sought after as a spring tonic "to thin the blood and purify the system." Oil of sassafras is distilled from the bark of the roots and is

used to perfume soaps and flavor candy and medicines. An orange dye is made from the bark.

SIERRA JUNIPER

Its Foliage Was Once a Cure-all

Juniperus occidentalic, HOOKER

Habitat—This is another of the hardy species of trees that climbs the highest mountains, growing in many places that are inaccessible to man. A husky, long-living tough specimen, often called the western juniper, it grows in exposed slopes and on the sides of canyons in dry, gravelly or rocky soils of high mountain regions from southeastern Washington through Oregon, Nevada, California and into Lower California. It reaches eastward into high elevations in Idaho, Montana, Utah, Arizona and New Mexico.

Growth and Appearance—Commonly the tree is from 20 to 30 feet tall and frequently only a bush. However, under favorable conditions heights up to 80 feet are often found. The trunks are seldom clear of branches for more than four to eight feet from the ground. Two types of pale, ashy green foliage are borne on each tree.

Availability and Use—There is little commercial value to the fine-grained, pale brown aromatic wood although it does have great durability when it is exposed to soil or weather. It is soft, brittle, splits easily and is the heaviest of all the cedar family. The sapwood is nearly white. There is some demand for it as a pencil wood, but it is used chiefly as a local supply of fence posts, railroad ties and fuel. The crushed foliage of the tree gives off a pungent, aromatic odor, and a decoction is sometimes used as a remedy for various illnesses. Known as a slow, persistently growing tree, it is chiefly recognized for its ability to grow as an advance guard where few other trees can exist.

SOUTHERN MAGNOLIA

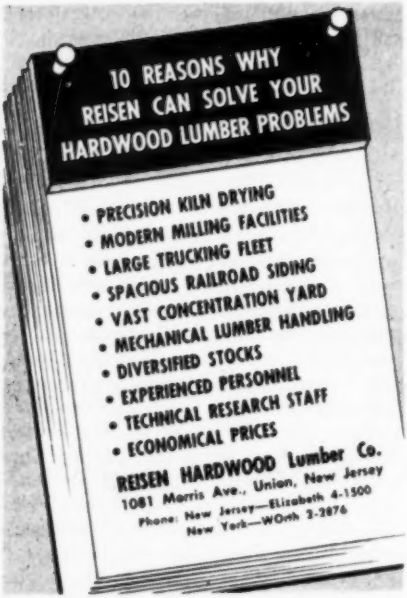
The Finest Ornamental Tree in U. S. Forests

Magnolia grandiflora, LINNAEUS

Habitat—The present magnolias are only a remnant of a very large group of forest trees of the north temperate zone. Fossil studies indicate that they are among the most ancient trees and shrubs. In the pre-glacial period they grew in Canada and Greenland, subsequently in Europe, Siberia and western North America. Their present natural range is southeastern North Carolina, along the Atlantic Coast to central Florida, westward along the Gulf Coast into eastern Texas. They also occupy a 100 mile strip along the coast, throughout the whole state of Louisiana and in Arkansas. It requires a rich soil and lots of moisture for best growth.

Growth and Appearance—Southern magnolias, forest grown, commonly reach to about 60 or 80 feet high and have trunk diameters of 3 feet. Often they have a straight branchless bowl up to 40 feet. The tallest trees reach upward to 100 feet.

Availability and Use—The sapwood is yellowish-white and is in distinct contrast to the light to dark brown heartwood which is usually tinged with green or yellow or colorful greenish-black or purplish-black streaks. The wood has a close, uniform texture, is straight-grained, low in shrinkage, weak in compression and bending, but stiff, hard and high in shock resistance. It is not durable when subject to conditions contributing to decay. Most of the wood is made into furniture although it has of late become preferred for making Venetian blind slats. It also finds important use as boxes and inside house trim.



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SILVER MAPLE

Contributes 5% of All Maple Cut Annually

Acer saccharinum, LINNAEUS

Habitat—Silver maple is sometimes called soft maple and is found as far north as New Brunswick, across Quebec, Ontario and Michigan, South Dakota and Kansas. It is not found on the coast or the higher reaches of the Appalachians, but does range south to western Florida and Oklahoma. It lives up to 125 years, growing most during the first 50 years.

Growth and Appearance—The trunk is usually short and divides into several large ascending branches not far from the ground. Forest grown trees rise and clear for from 30 to 50 feet with trunk diameters of from 2 to 4 feet. The word silver is added as descriptive of the thin gray bark on trunk and larger limbs. The leaves are pale green and shiny above, smooth and silvery beneath. They are five-lobed, deeply indented, sharply toothed with an even or heart-shaped base.

Availability and Use—The wood, light brown in color, is strong, brittle, close-grained and rather hard. The sapwood is almost white and like the heartwood takes a good polish. It is used for cheap furniture, flooring, interior finish, woodenware, veneer and fuel. Considerable quantities are burned for charcoal, wood acetate and other products of distillation. It is estimated that silver maple forms about five percent of the total maple cut in the United States. The tree is not adapted to ornamental planting as its brittle limbs are easily damaged by wind and ice storms.

SOUTHERN CYPRESS or BALDCYPRESS

The Living Fossil or the Wood Eternal

Taxodium distichum,

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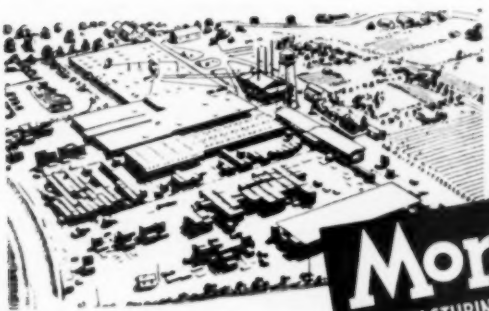

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MORGAN MANUFACTURING COMPANY, INC.

Habitat—Evidence indicates that this tree, often mentioned in the Bible, is probably one of the, if not the, oldest living species. It is called the living fossil because it represents the last of a long line of trees that flourished on the earth millions of years ago. Originally its range extended over most of North America with similar species growing in northern Asia and Europe. Its present natural range extends along the Atlantic coastal plain from Delaware to Florida, westward through Louisiana and Texas to the Mexican border.

Growth and Appearance—Cypress does best in the deep swamps of the lower Mississippi Valley and Florida where it often forms pure forests. It is also found in parts of Mexico. In fact, it is claimed that the oldest living thing on the North American continent is a 5000-year-old cypress in the state of Oaxaca, Mexico. The tree grows tall when young and develops a buttress-type base and expanded root system. Both of these help it to keep stable in the soft wet soil where it grows best.

Availability and Use—The nature of its growing environment seems to make cypress particularly adaptable for outdoor use. It is used for beams, posts and heavy timbers in docks and bridges, water tanks, ships, cross-ties, shingles, caskets, laundry appliances and greenhouse equipment. Because of its durability under exposed uses it is often referred to as "the wood eternal."

SOUTHERN RED OAK

A Red Oak From the Black Oak Group

Quercus falcata, MICHAUX

Habitat—Locally southern red oak is called Spanish oak, Spanish water oak, spotted oak, turkey oak and red hill oak. From southern New Jersey this not too

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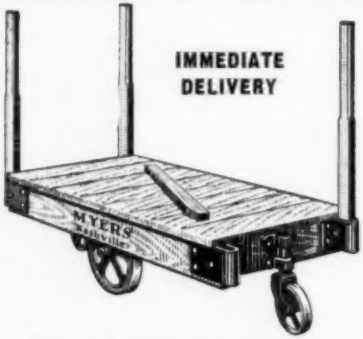

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valuable tree ranges through Pennsylvania and the south Atlantic and Gulf states, including the northern half of Florida, west into Texas and north into Missouri, Illinois and Indiana.

Growth and Appearance—The tree grows to about 80 feet. Southern red oak has a peculiar leaf condition rarely found in this species. In reality it belongs to the black oak family; its leaves are firm, dark green as they are on the black oak. They are glossy above, paler and downy beneath and occur in a variety of shapes. In general there are two types of leaves. A finger type with slender pointed lobes, the terminal one curved like a scythe blade is one type. The other resembles the shape of a bell. Both kinds occur on the same tree—the scythe-type on the upper branches and the bell-shaped ones on the lower.

Availability and Use—The coarse-grained, light red wood is hard and strong, checks badly when drying and is not durable in contact with the soil. It is used for general construction, slack cooperage, crates, furniture and fuel. Southern red oak makes up about seven percent of the stand of all the oaks.

SUGAR PINE

The Wood Match Tree
Pinus lambertiana, DOUGLAS

Habitat—The tallest and most magnificent of the pines, sugar pine grows in a restricted narrow strip about 1000 miles long extending from southwestern Oregon, along the western slopes of the Sierra Nevada and coast ranges of California at elevations of 1000 to 9000 feet above sea level, thence to Lower California.

Growth and Appearance—Although trees 160 to 180 feet high and trunk diameters of 4 to 7 feet are most common, heights of 250 feet are often found. The trees mature at from 300 to 600 years and stand on a shallow but broad root

system. Sugar pine gets its name from the crisp globules of resin that exude from the bark after it has been pierced or injured. These globules are sweet with a pleasing pitch flavor.

Availability and Use—The fragrant wood is light colored, soft, straight-grained and when planed has a satiny appearance. Except for the fact that it changes color less on exposure and is whiter, it is similar to and enters into all uses as eastern white pine does. Besides being used to make wood matches, sugar pine has a prominent place in general construction, interior trim and pattern and model making. It is selected for these uses because of its freedom from warping or twisting with moisture changes, its durability in contact with soil and the large boards that are possible.

RED PINE

Grows Best on Dry, Gravelly Ridges

Pinus resinosa, AITON

Habitat—From southern Canada throughout the northern states from Maine to Minnesota, and south as far as Pennsylvania. Scattered specimens are found in West Virginia. It reaches its optimum development on sandy plains in the Great Lakes region, as well as on dry, gravelly ridges of the more eastern states.

Growth and Appearance—With 2 to 3 foot trunks, it usually grows to 60 or 80 feet.

Availability and Use—The heartwood, a pale red, close-grained with rather conspicuous annual rings, is stiffer, stronger and heavier than white pine. The heartwood is surrounded by a moderately thick layer of light yellow sapwood. Red pine is of great commercial importance, being in demand for construction work, piling, door and window frames, sash, flooring, boxes, crates, ship masts. It is not durable when used without treatment in contact with the soil.

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SECTION

Steam Spraying

REDUCES COSTS

By Thomas A. Dickinson

STEAM spraying is a new and unusually efficient finishing process now being used by Weber Showcase and Fixture Company of Los Angeles and Clayton Manufacturing Company at El Monte, Calif.

It consists briefly of using steam pressure instead of pneumatic pressure to apply synthetic enamels and other organic coatings to wood and many related product surfaces. This is said to reduce finishing costs by a substantial margin without a parallel reduction in the quality of an applied coating.

Steam is an economical source for heat and pressure in organic finishing operations, because it can be obtained from boilers of the type that are already available in many shops.

All but 1% of the moisture in the steam emerging from a boiler is removed by passing the steam through a separator, after which the temperature of the steam is greatly increased by means of a thermostatically-controlled "superheater." Standard reducing valves govern the pressure of the steam as it is superheated and piped to a tank containing the coating solution. Then finishing operations are accomplished with a manual gun in a booth, much the same as finishing operations are accomplished with pneumatic spray equipment.

Materials applied with steam-spray equipment have been thermosetting resin compositions (such as the alkyd, phenolic, and urea enamels which solidify as the result of exothermal chemical reactions).

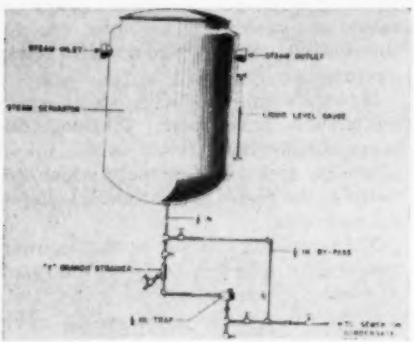
Thermoplastics (such as the lacquers and shellac which solidify as the result of solvent evaporation) might be steam sprayed, but there is room to doubt whether this would be practical in view of the fact that very small quantities of moisture can cause thermoplastic coatings to "blush" or become defective.

In thermosetting coatings, the small quantities of moisture in superheated

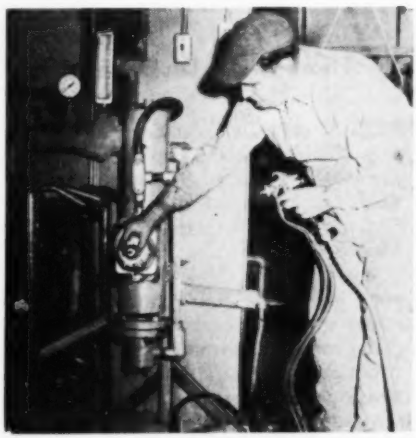
PRESSURES AND TEMPERATURES FOR STEAM SPRAYING

Lbs. Sq. Inch, Pressure	Saturated Steam Temp., °F.	Steam Temperature, °F. Range at Gun Minimum	Maximum
54	285.90	296	356
56	288.23	298	358
58	290.50	300	360
60	292.71	303	363
62	294.85	305	365
64	296.94	307	367
66	298.99	309	369
68	300.98	311	371
70	302.92	313	373
72	304.83	315	375
74	306.68	317	377
76	308.50	319	379
78	310.29	320	380
80	312.03	322	382
82	313.74	324	384
84	315.42	325	385
86	317.07	327	387
88	318.68	329	389
90	320.27	330	390

steam tend to eliminate the need for solvents or thinners of the types ordinarily used in coatings which must be applied with pneumatic spray equipment; and the temperatures of materials emerging from a steam-spray gun are such that virtually all of the moisture in the steam is dispersed in the atmosphere before it can reach a deposition surface.

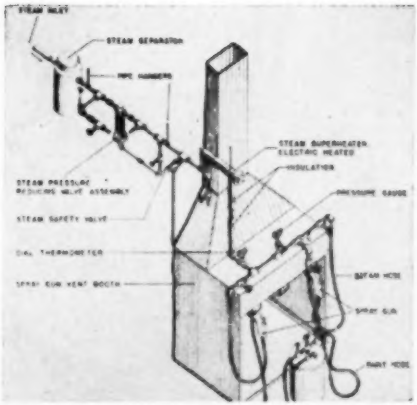


Separators and other accessories of the type used in steam heating buildings make it possible to use steam for finishing purposes. Purpose of the separator, as shown here, is to remove excess moisture from the steam produced by a boiler.



A finisher at Clayton Manufacturing Company sets the thermostat which controls the output temperature of steam used in applying organic coatings.

Little or no heat is conveyed by a steam-spray coating to a deposition surface, due to the cooling action of open air, but the preliminary use of heat does tend to accelerate the chemical reaction which will solidify a thermosetting re-

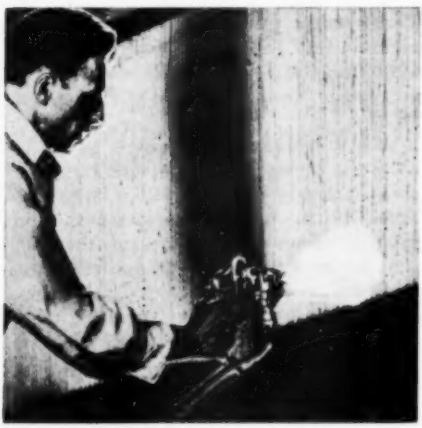


Schematic version of a spray booth for steam finishing operations.

sin — thus reducing the need for special heating or baking equipment.

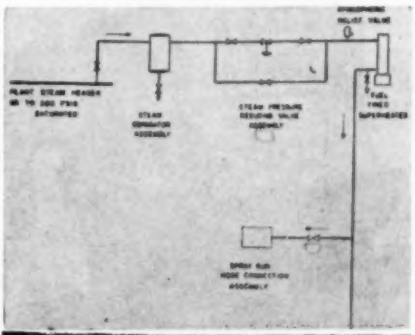
The rapid solidification of sprayed thermosets in turn enables finishers to apply relatively thick coatings without the delays or defects that could otherwise be anticipated.

No western manufacturers are yet known to have combined steam-spray and electrostatic finishing facilities. However, this might be practical. Electrostatic finishing consists of allowing the output of a spray gun to pass through a high-voltage field, so that the sprayed particles will be electrostatically charged and electromagnetically attracted to the surfaces of conveyor-grounded products, where it is economically practical to accomplish finishing operations with fully automatic equipment.



Plywood panels for store fixtures are steam finished with a clear phenolic coating resin.

Boilers now used to provide pressure for finishing purposes have maximum capacities of 50 lbs. per hour for each spray gun. One of the best of these is a product of the aforementioned Clayton



Schematic diagram showing the elements essential to the use of steam for finishing purposes.

organization. It was initially developed to facilitate the steam cleaning of automobiles and it produces steam containing less than 2% moisture.

Many different superheaters, separators, pressure valves, gauges, etc., are economically available for steam-finishing purposes from manufacturers and suppliers of conventional steam-heating equipment throughout the United States.

Special spray guns are essential to the application of coatings with steam pressure, since the heat of superheated steam would make it impossible for a worker wearing the heaviest gloves to use a

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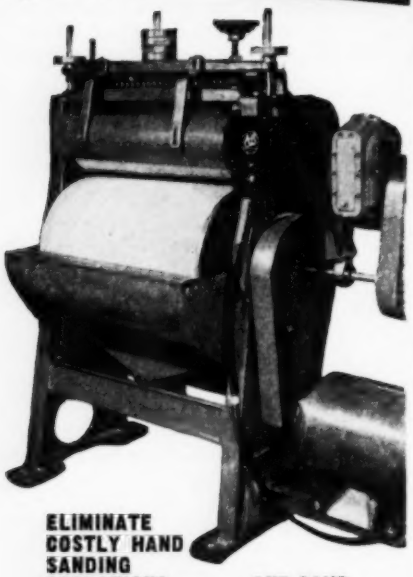

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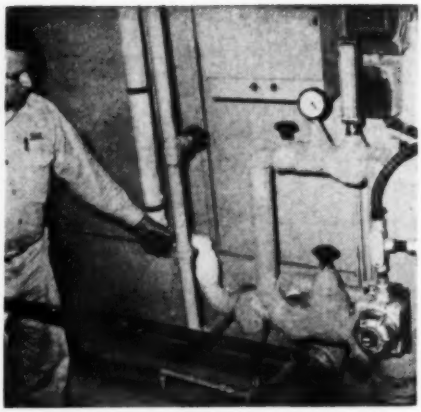

A reducing valve is opened to convey steam pressure from a boiler to the accessories required to use that pressure for finishing purposes. A gauge in the upper right portion of this photo indicates the amount of pressure provided by the boiler.

conventional pneumatic gun for such work. However, steam and pneumatic spray guns can be distinguished primarily to the extent that the former have insulated handles. Manufacturers of spray guns which are suitable for steam-spray purposes at this writing include DeVilbiss Company of Toledo, Ohio, and the Kellog Division of American Brake Shoe Company at Rochester, N. Y.

Where adequate equipment is available, the hazards of steam finishing are comparatively slight. Workers have suffered burns due to carelessness and fatigue. However, in view of the fact that steam spray coatings minimize the need for volatile solvents or thinners, the possibility of injuries resulting from actual fires or the inhalation of toxic vapors has been measurably reduced.

The nozzles of steam sprayguns have a tendency to become clogged due to the solidification of coating materials therein. This can usually be avoided by increasing operational pressures over

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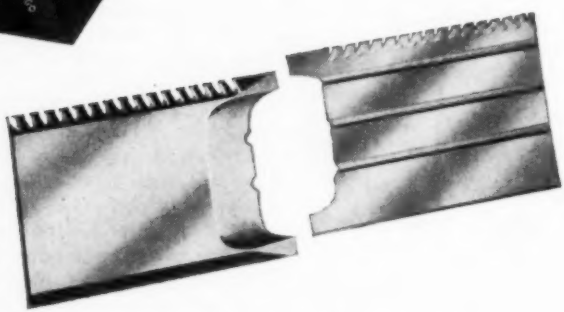

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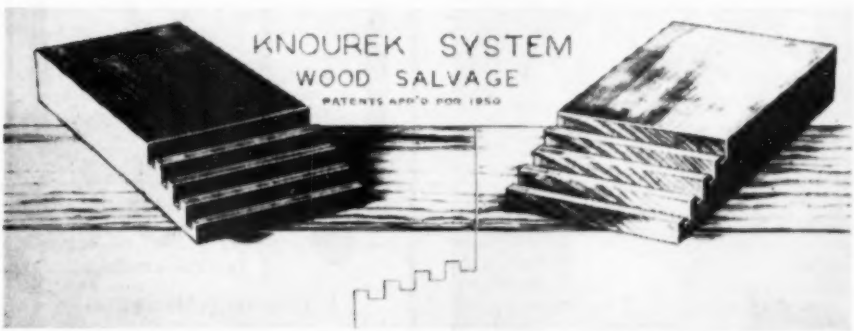

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a period of six to eight hours; but, where the use of high steam pressure is not practical, it is a simple matter to make use of a replacement nozzle while soaking a clogged nozzle in a caustic stripper solution.

Coatings applied with steam-spray equipment are not necessarily better than the same materials applied with other types of equipment. However, steam spraying does make it possible to apply coatings that are most likely to be free from defects at a comparatively low cost.

Reduced costs are principally attributable to materials savings amounting to as much as 20%, fewer rejections due to applicational deficiencies, and lower expenditures for power.

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82-32

FINISHING RADIO CABINETS

By F. H. Thomas

IN this discussion it is not my purpose to cover all possible methods of finishing radio cabinets and similar products, but I will attempt to describe to you some of the most popular methods in use today.

First of all, I would like to state that the manufacture of radio and television cabinets is one of the big industries. It is reported that the television industry is headed toward being the fourth largest industry during the next four years. The cabinets are already in great demand. Manufacturers of radio and television receivers are actually having difficulty in finding someone to make cabinets for them. Those that are making cabinets are looking for all possible methods to speed up and increase production. They are employing the quickest drying finishing materials and many of them are force drying to speed production still further. They are using those materials which give the best job in the fewest number of coats or operations. The Radio Manufacturers' Association and the individual receiver manufacturers have certain standards of quality and appearance which they must meet. Consequently, it is a balance of quality against speed.

Lacquer has been popular in cabinet finishing since the beginning. Its reputation for quality of finish and speed in drying has been just what the cabinet people require. Nearly all of the cabinet manufacturers still use it. A typical schedule using lacquer is given below:

Schedule for Finishing Walnut and Mahogany Cabinets in a Medium to Dark Color of Finish

Wood: Walnut and mahogany plywood is used in combination with gumwood or tupelo. The front sides and top would be of walnut or mahogany plywood, the posts and base of solid gumwood or poplar, and the record compartment, backs of doors, etc., of gum plywood.

The cabinets are usually prepared for finishing by glue sizing (spraying a thin coat of glue) drying and sanding with 5/0 paper in the cabinet room, before it reaches the finishing room.

The operations in the finishing room are then as follows:

Spray uniforming stain: This stain is applied only to the gumwood so as to bring it over to the color of the walnut or mahogany used in combination with it. If walnut is used and there is any sapwood present, it is stained with a so-called "sap-stain" to darken it to the color of the rest of the walnut. Uniforming stains and sap stains are quick dry stains that dry in 10 to 15 minutes or can be coated immediately with the body stain without any serious trouble. Sometimes this pre-staining is done in the cabinet room and oftentimes before all the parts are assembled.

Spray body stain: This is an "over all" quick dry stain that is applied uniformly over the entire cabinet. Often it is also sprayed on the interior of the

Mr. Thomas is with the Sherwin-Williams Company.

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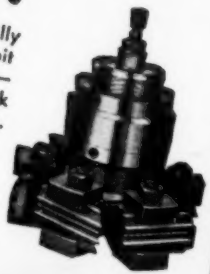

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cabinet, although sometimes a separate interior stain is used and applied immediately after the body stain. Drying time is 20 to 30 minutes.

Spray washcoat of lacquer sealer or shellac: This is a very low solids coat that is used to raise the wood fibers so that they can be sanded and cut off easily. Washcoating is not always done but is a good practice as it helps the filler to wipe off clean and improves the clarity of the finish. The washcoat dries in about 30 minutes.

Sand: The surface is sanded smooth with fine (7/0) sandpaper.

Fill: Filler is a paste or semi-paste material consisting essentially of silex or silica, oil and pigment color. It is used to fill and color the grain of open pore woods. It also aids in blending the gum wood and the other woods into a uniform color tone. Filler is reduced with naphtha and brushed or sprayed. As soon as it starts to flatten on the wood or "gray over" the operator starts to work it into the pores of the wood with a rotary-across-the-grain-motion. All excess filler is wiped off across the grain until the wood is clean. The wood can then be wiped lightly with the grain to remove any cross streaks, taking care not to wipe any filler out of the pores. There are fillers that air dry in 1 hour, 4 hours and overnight or force dry in 30 minutes, 1 hour, or 4 hours. The choice depends upon quality and time available.

Spray lacquer sanding sealer: This is usually a quick drying material of about 21% non-volatile content. It dries in one hour and after sanding provides a smooth foundation for the topcoats. The smoother the foundation, the less rubbing will be required later on.

Sand: A 6/0 paper is used.

Patching: This is usually done here, as necessary, using earth color and

French polish. No drying time is required.

Shade: This operation is to highlight the cabinet or to even-up the color of the cabinet by spraying a shading lacquer. Very little shading except for highlighting is necessary if a good job of pre-staining was done in operation No. 1. Drying time, two to five minutes.

Spray first topcoat lacquer: This is usually a 24% or 27% lacquer which is applied in a full wet coat and allowed to air dry one to two hours or is force dried 30 minutes to one hour. Flattened lacquers that are just off the gloss are popular for topcoats as some parts of the cabinet are not rubbed and the "rubbed effect" sheen blends in with the rubbed sections.

Apply decals: At this point, after the first coat is dry, decals giving dial numbers, name of the radio, etc., are applied.

Spray second coat of lacquer: This is the same lacquer used in operation No. 10. It is usually allowed to air dry overnight before rubbing or is force dried about two hours and rubbed as soon as it cools. Force drying is usually at 120-125°F. without humidity control, at 135-140°F. with humidity control.

Sand: The cabinet top, front and in some cases, sides are machine and hand sanded with 320 paper and a mixture of oil and naphtha to a smooth finish free of all "orange peel."

Compound: For a bright lustre the finish is then hand rubbed with fine rubbing compound until all scratches from the sanding operation are removed. This results in a high lustre and a very smooth finish. The cabinet may then be finished off with polish for a final clean up.

For a soft lustre the sanding operation is followed by rubbing with 4/0 steel wool and brown liquid wax.

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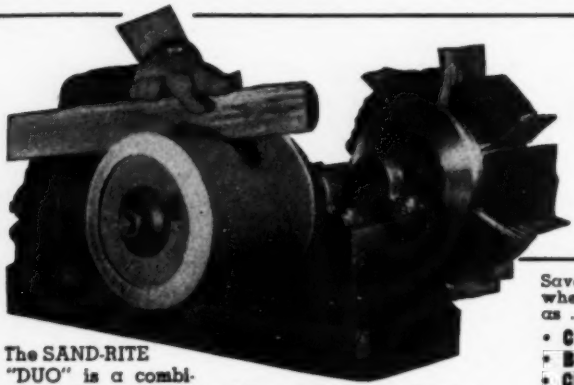

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The cabinet is now ready for applying the hardware and grille cloth and for final inspection. The entire finishing schedule can be completed in 24 hours. The time of application of all materials is often as little as four hours. If force drying is used to maximum advantage the cabinet can be completely finished and rubbed in as little as eight or nine hours.

Following is a typical system for obtaining a bleached finish:

Bleached Mahogany Finish

1. Spray bleach and dry overnight.
2. Sand with 6/0 paper.
3. Spray wash coat of water white lacquer sealer and dry ½ hour.
4. Sand with 6/0 paper.
5. Fill with a light harvest filler and dry 1-4 hours.
6. Spray 21% water white lacquer sealer and dry 1 hour.
7. Sand with 6/0 paper.
8. Spray first coat water white waxing lacquer and dry 1-2 hours.
9. Spray second coat water white waxing lacquer and dry 2 hours.
10. Dry sand with 6/0 paper.
11. Rub with 4/0 steel wool and blond wax.

Overall finishing time after bleaching 7-11 hours.

Schedule for obtaining a bleached effect without bleaching the wood:

Simulated Bleach Finish on Mahogany.

1. Spray blond lacquer toner and dry 1 hour.
2. Sand with 6/0 paper.
3. Brush out pores carefully.
4. Fill with light harvest filler and dry 1-4 hours.
5. Spray 21% water white lacquer sealer and dry 1 hour.
6. Sand with 6/0 paper.
7. Spray first coat water white waxing

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lacquer and dry 1-2 hours.

8. Spray second coat water white waxing lacquer and dry 2 hours.
9. Dry sand with 6/0 paper.
10. Rub with 4/0 steel wool and blond wax.

Overall finishing time 7-11 hours.

This article was first presented at an area meeting of the Forest Products Research Society and is reprinted with permission.

NARROW WIDTH HARDBOARD PANEL

A light, natural wood color tongue and groove hardboard panel, 16" wide by 8' long, was introduced recently by the Forest Fiber Products Co., Forest Grove, Oregon.

The first such hardboard panel to be introduced, it is known as the Tee-N-Gee panel and has been made possible through the development of special equipment designed by company engineers. Heretofore, four by eight foot hardboard panels have been standard sizes, we are told.

The panels may be sawed, planed, drilled, nailed, stapled or glued in place and applied either vertically or horizontally for a variety of designs. They may also be curved for rounded corners or for special effects. The panels are nailed or stapled along the ⅜" tongue and are covered over by the joining panel in such a way that the nails do not show. Having a smooth, hard surface, paint is applied evenly. The panels can also be left in their natural color and waxed.

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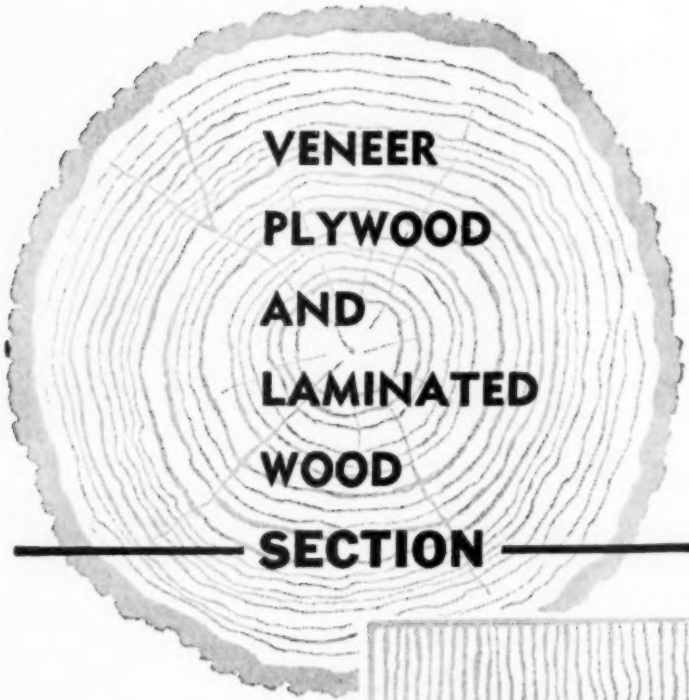

VENEER PLYWOOD AND LAMINATED WOOD SECTION

Features . . . .

Types of Plywood
By Thomas Perry

Veneer and Plywood
By Ned Bailey

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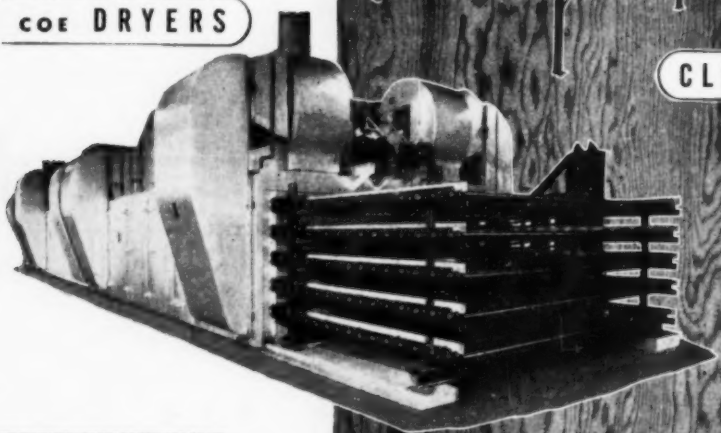

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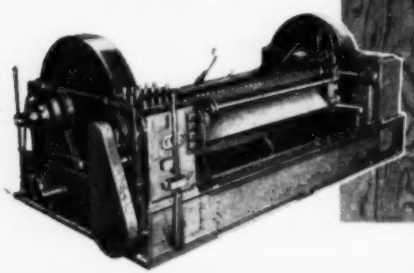

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TYPES OF PLYWOOD

Part 14

PLYWOOD IN COMPOUND CURVATURE

By Thomas D. Perry

Compound curvature differs from simple curvature in the same way that the complex shape of a sphere or globe differs from the simpler shape of a cylinder.

THE article in the December issue on "Plywood in Simple Curvature" described a number of methods of producing simple curves in plywood, but in all instances the pressure was exerted in a single direction. On the other hand, the problems of compound curvature in plywood require pressure in many directions, as may be obtained by inflating or deflating a rubber bag. When such a flexible rubber bag is used against a rigid mold or matrix, the bag becomes half of the pair of mating dies.

This type of fluid pressure is a marked departure from the unidirectional pressure normally exerted by screws or pistons, either pneumatic or hydraulic, and requires not only different equipment, but also demands new approaches to the techniques of assembling the various veneer layers into plywood.

Fluid pressure is the only practical way of exerting omni-directional pressure in plywood with compound curvature. It is also true that the same types of fluid pressure can be, and often are, employed in making plywood with simple curvature, and even for flat plywood and assembly work.

Flexible Pressure Methods

Fluid pressure is nothing new and has been standard procedure in making automobile and truck tires for many years. Its adaptation to the veneer and plywood industry dates from the early 1930's, when the process was used for veneering round pilasters, a feature then popular in furniture and radio cabinets.

The earliest method that found considerable commercial recognition was called the vacuum bag process, which employed rubber bags, with wide mouth at one end, but provided with a tight closing device. A series of pilaster bases were placed in the bag, and face veneers with glue spread on the underside, were tacked lightly on each base. The bag was closed as promptly as possible and the air exhausted from the bag by a vacuum pump. The effect was to apply atmospheric pressure, up to about 15 pounds, p.s.i., to the face veneers against the pilaster base. Since this pressure was gradual in effect, the workmen could "massage" the outside of the bag to push the veneers against the base, and to rub away air pockets that might develop. The general arrangement of pedestals and rubber bags is shown in Fig. 1.

The vacuum had to be maintained for an hour or two, until the glue had attained a firm grip, and the cycles repeated as often as necessary to complete the job. Some companies had a dozen or more vacuum bags in service and the

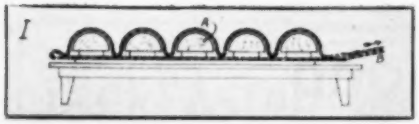

Fig. 1 Vacuum bag process of veneering pilasters.

results were reasonably satisfactory. The relationship between the thickness and grain direction of the face veneer, with the radius of curvature of the pilaster face, had definite limits, due to the inadequacy of the 15 pound pressure.

In studying the possibilities of increasing this 15 pound pressure to permit sharper curves, one enterprising furniture manufacturer set up an idle pressure tank and arranged to place the vacuum bags, containing their pilaster assemblies, in the pressure tank. The tank was closed and the pressure run up to 50 to 100 lbs. p. s. i. This method was so successful that patents were taken out. However, the normal rotation of designs in furniture pretty much eliminated these pilasters, the vacuum-pressure combination process fell into disuse, and the patent papers were pigeon-holed!

These early vacuum-pressure methods were before resin adhesives were generally available, and employed either animal or casein glues.

Molded Plywood for Aircraft

Toward the end of the 1930 decade, and in the early 1940's, there was renewed interest in plywood aircraft, especially for the smaller types of trainer and communication planes. Aluminum was scarce, and the directive to utilize plywood in the place of aluminum, wherever possible, concentrated atten-

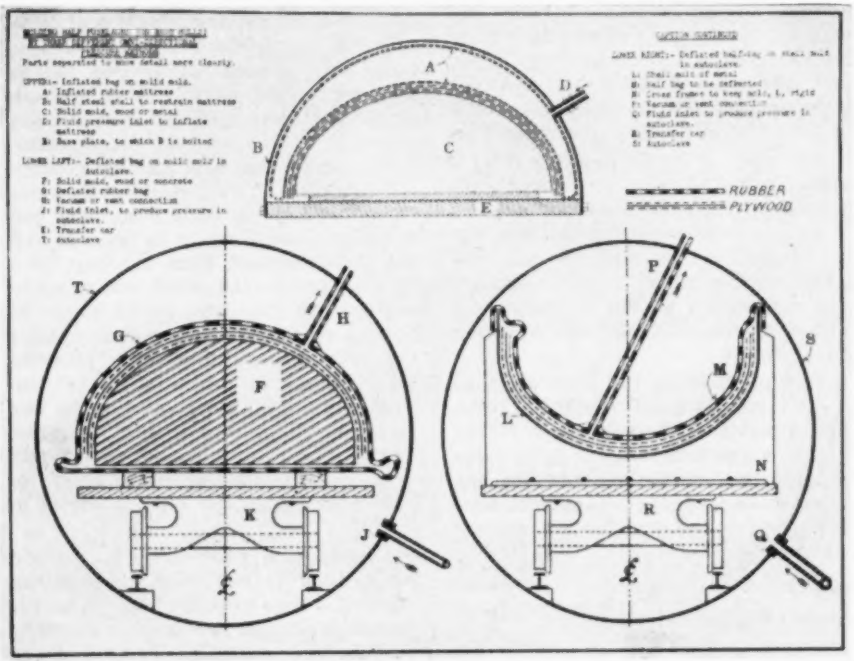

Fig. 2. Autoclave processes for flexible pressure.

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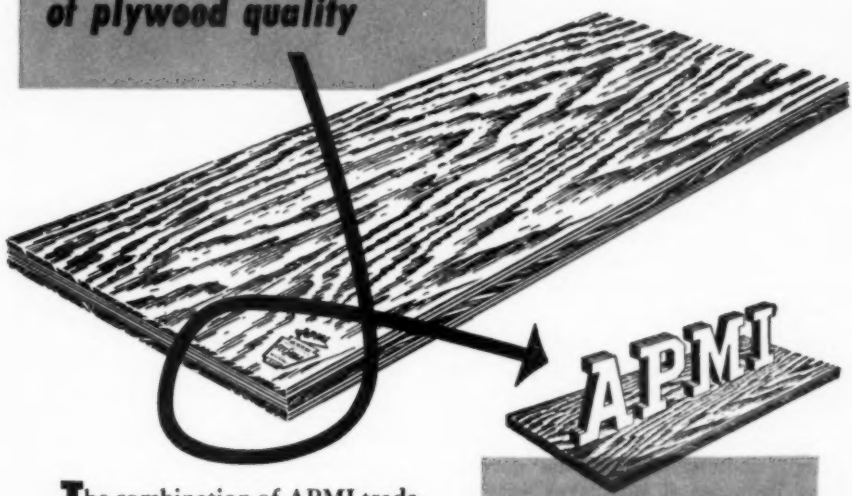

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Fig. 3. Wrapping the mold. Courtesy U. S. Plywood Corporation.

tion on monocoque constructions of plywood. This required molded plywood with compound curvature and of such intricate shapes as might be required for a fuselage or nacelle.

The development of the autoclave method of making molded plywood was rapid, largely due to the fact that much of the development work was classified as a military necessity, and hence largely underwritten by the government. Batteries of autoclaves were installed in many of the larger aircraft and plywood factories.

So far as I have been able to discover this autoclave development had no connection with the earlier vacuum-pressure process, as used some ten years before in the furniture industry, although these processes closely paralleled each other. It is interesting to note that the pigeon-holed patent, previously mentioned, was found to be the basic patent in the field. The story is told, that two New Yorkers, from competitive companies, determined to buy this basic patent; one of them travelled down to North Carolina by train, the other flew. When the railroad passenger arrived, his rival had closed the deal, and the patentee was richer by many thousands of dollars, for a patent he had almost forgotten!

Autoclave Process

The illustrations in Fig. 2 show three stages in the development of this autoclave process. The upper central cross section shows the earliest type of autoclave; perhaps it is better called the forerunner of the autoclave. The half cylindrical steel pressure tank (B), bolted to a rigid base (E), encloses an inflatable flexible bag (A), which is without vacuum connections. The rigid mold (C) was usually of wood, so that veneer layers could be tacked in place. In some instances it was of metal containing steam chambers to provide the heat for curing resin adhesives. The pressure connection (D) provided for compressed air, hot water or steam.

The shape of the plywood in all three sketches of Fig. 2 is the same and represents approximately a half fuselage of an airplane, or the hull of a small boat, tapering in contour from one end to the other.

The second stage, illustrated in the lower left sketch of Fig. 2, was a cylindrical tank (T), provided with transfer dolly and track (K) for moving the

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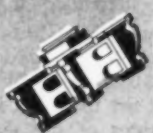

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Courtesy U. S. Plywood Corporation.

Fig. 4. Veneer assembly, "in the bag."

mold (F), which was enclosed in the rubber bag (G), the veneer layers on the mold being pressed down between the mold and the bag. The vacuum connection (H) removes all air from the interior of the rubber bag and allows the operator to be certain that there are no air pockets, and that the veneer layers do not overlap each other. This vacuum is first applied to the bag outside the autoclave, and is continued after the autoclave is loaded and closed. After closing, steam, compressed air or hot water enters the tank at (J), providing pressures up to 100 pounds p.s.i., and heat usually up to 250°F.

The third stage of development, shown in the lower right view of Fig. 2, is a modification of the second stage, and can only be used when the veneers can be assembled in a flat "blanket." In this third stage, a thin sheet metal shell (L) is provided, instead of the solid mold (F). This shell is supported on sheet metal saddles (N), and serves as half of the rubber bag. The rubber half of the bag (M), is tightly clamped to the edges of the shell mold. The vacuum with-drawal pipe (P) and the pressure inlet (Q) function as in the second stage.

Laying Up the Veneers for Molded Plywood

In the vernacular of the trade, this operation is called "wrapping" the mold. The veneers are run through the glue spreader, to be coated on one or both sides with a resin adhesive. After solvent evaporation, the veneers are dry and easy to handle. The photo in Fig. 3 shows a dozen or more plywood boat hulls in the wrapping stage.

For such boat hulls, the strips of veneer are relatively narrow, 6" or less, and are laid at the angle that best adjusts itself to the contour of the hull, with the adjacent layers at a considerable angle to the preceding layers. In order to hold the veneer strips in place, they are lightly stapled to the mold and to each other.

In this wrapping process, keels, ribs and other frame members can be bedded in the mold and made an integral part of the glued monocoque structure.

The minimum number of layers for a boat hull is usually five, but extra reinforcing layers can be added at any desired location.

A rubber bag is slipped over the veneer assembly and mold, as is shown

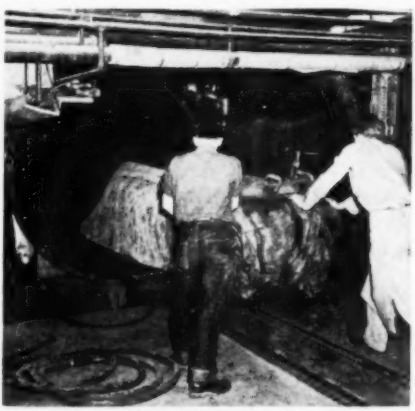

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Fig. 5. Charging the autoclave.

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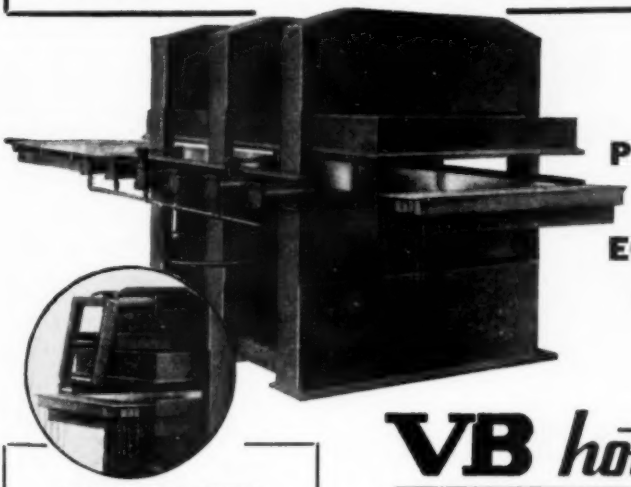

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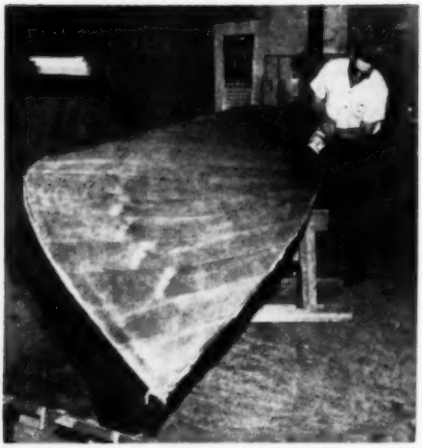

Courtesy U. S. Plywood Corporation.

Fig. 6. Small boat hull of molded plywood.

in Fig. 4, and the end of the bag clamped tightly. The vacuum is established before entering the autoclave, and is continued during the entire curing cycle in the autoclave.

Rolling the rubber bag assembly into the autoclave is illustrated in Fig. 5. After the autoclave is closed, and the door bolted tight, it is subject to pressure, usually steam, since the heat cures the resin adhesive, while the pressure established close contacts between the veneer layers. The heating cycle in the autoclave usually requires about an hour to reach the maximum temperature, approximately 250° F. It requires two or three hours to exhaust the steam from the autoclave and reduce the temperature sufficiently to withdraw the mold and plywood from the autoclave.

While this process found substantial use in military projects, its chief commercial use in postwar industry appears to be one-piece boat hulls, such as shown in Fig. 6.

While it is obvious that a one-piece plywood boat hull costs more than the conventional type made of narrow strips of solid lumber, its lightness, stiffness and freedom from joints that must be calked, have established and maintained a substantial market for plywood boats and canoes up to about 16 feet long.

The long operating cycles in the autoclave, with deflated flexible rubber bag, which are required to heat up and cool down the charge, have largely barred the use of the autoclave for smaller and simpler items of molded plywood.

Internal Inflatable Rubber Bags

A new technique was developed for such small and simple items of ply-

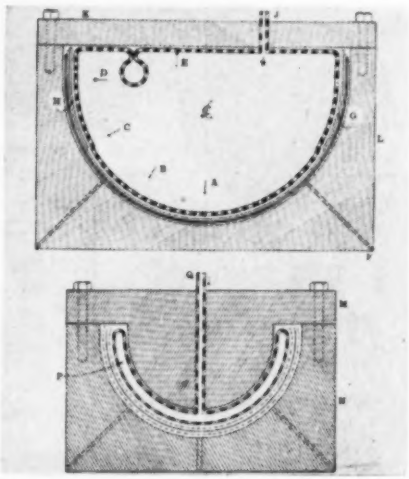

Fig. 7. Internal bags in self-contained molds.

wood in compound curvature to eliminate the autoclave and its costly operation. This is illustrated in Fig. 7, and shows two types of forms or molds used for such a normal item as a semi-sphere. Such semi-spheres, when scarfed and glued together into a complete sphere, found considerable use as floats for submarine protective nets.

In the upper sketch of Fig. 7, the metal cover (K) is flat and bolted to the base (L). The veneer assembly is laid in the base section, the cover is bolted in place, and the entire cavity

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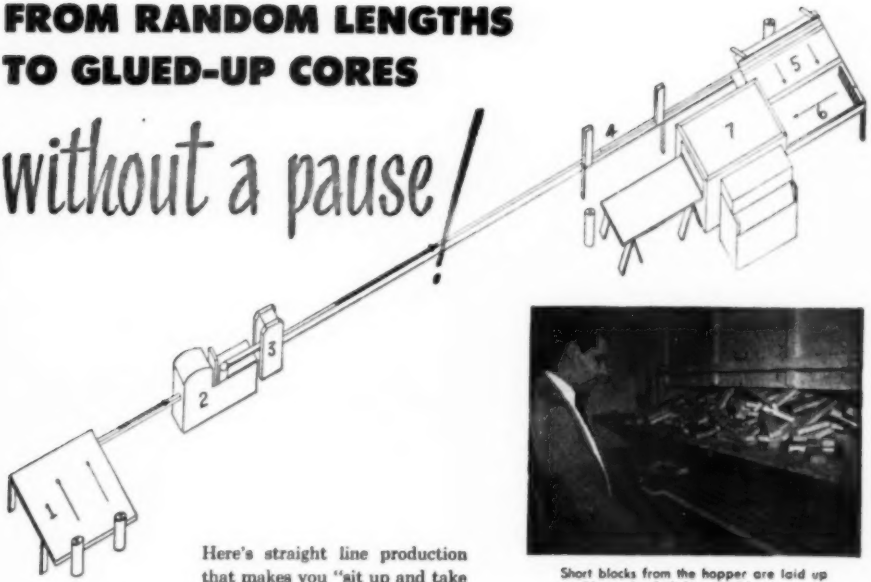

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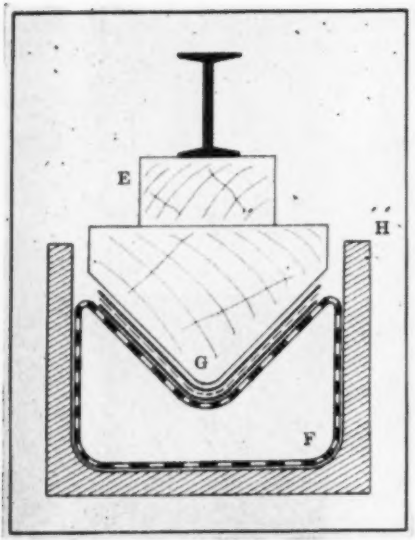

Fig. 8. Making angle clips with tubular pressure.

filled with the bag, as it is inflated with steam through (J).

In the lower sketch, the top half of the mold (M), conforms approximately to the contour of the base (N), leaving a gap of 2" to 4" between, in which space the veneer assembly is laid. The rubber bag (P) is relatively thin, and serves substantially as a pneumatic cushion, requiring a minimum of steam and time per cycle of operation.

The process of laying up the glue coated veneers for a sphere requires that they be tailor-cut to the approximate tapering shapes of the segments of an orange peel. These veneer segments are laid up on a false form, or dummy, with the convex side up, for convenience in working. When the lay-up is completed, and temporarily held together by staples, gummed tape, or spot heat applications, it is removed from the false form, and laid in the base mold, which is provided with relief passage for entrained air or any possible accumulation of condensation. The operating cycle need not be more than 10 to 15 minutes, and the cooling stage can be largely eliminated by providing automatic interlocking pins to hold the cover to the base.

It is to be noted that extra inside veneer layers (G and H) are shown in the upper sketch of Fig. 7. They permit reinforcing of the scarfed joint which will be used to unite the two halves of the semi-sphere.

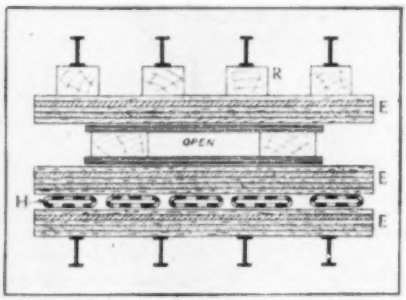

Fig. 9. Tubular pressure in assembly work.

Tubular Pressure

Tubular pressure is a variant in rubber bag pressure, in which a rubber hose with 2-1/2" inside diameter is used instead of the larger rubber bag, or the rubber blanket clamped to the sheet metal forms.

The simplest application of this tubular pressure is shown in Fig. 8, in which the hose (F) rests in a steel channel (H). The mold (G) may be of wood or of metal, with a spacer block (E) against the "I" beam. The plywood shape shown in the illustration is an angle clip, but a wide variety of shapes can be made by altering the mold (G). Hot water is the customary pressure medium, to avoid the possible leakage that may occur in dry woven hose.

Pressure obtained by inflating rubber hose has many applications, especially in assembly work, where joints may be flat or curved or even spiral. An application to flat pressure work is shown

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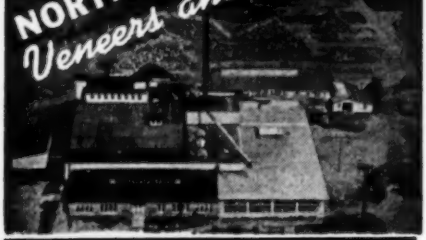

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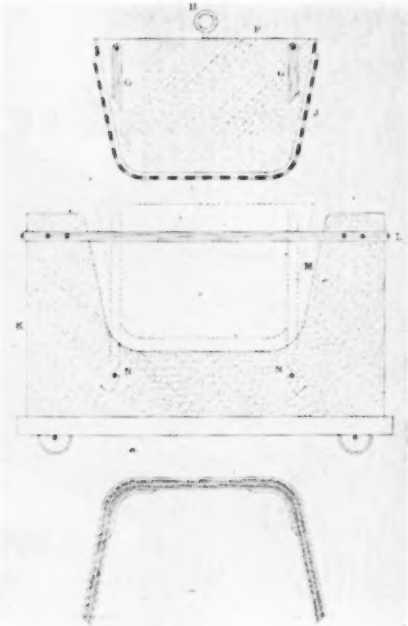

Fig. 10. Molded plywood for furniture.

in Fig. 9, where a series of tubes take the place of either screws or hydraulic pistons. In employing this type of tubular pressure, it is important to have the inflated hose at maximum pressure as flat as possible, to secure adequate pressure distribution.

Cushion Pressure in Simple Curvature

Molded plywood is finding increasing use in modern functional furniture, where round corners are desired. The three sketches of Fig. 10, suggest such a process, in which the inner mold (F) in the upper sketch is faced with an inflatable rubber blanket (J). This inflatable blanket contains narrow and flat heating units, of the resistance type, that will cure the resin adhesive in relatively short operating cycles. The veneers are assembled flat, laid in the lower or outer mold (K), and the upper or inner mold lowered until the side

bars (G) engage the pins (N) in the center sketch. Inflation, usually pneumatic, forces the plywood into the contour of the lower mold.

The lower sketch shows a cross section of the resulting plywood, with a reinforcing layer of veneer at the inside of the rounded corners. Using this cushioned inner form permits the making of various thicknesses of plywood with the same forms.

Formed Plywood in Slightly Compound Curvature

A moderate amount of compound curvature in plywood can be secured by pressing the assembled veneers between pairs of rigid metal dies that are heated. Examples are the well known "Bentwood" or "Toastmaster" plywood trays, which have become so popular. The upper and lower face veneers are first glued flat to a very thin crossband, making a 2-ply combination that can be sanded flat. These are assembled on the core and placed between the forming dies. Under heat there is enough "give" in the veneer to make smooth corner curves, but there are limits to the degrees of curvature that are obtainable. It is to be noted that this moderate "dished" effect is largely due to the slight ductility that is imparted to the wood by heat.

Conclusions

The plywood products described in this article, either in compound curvature, or made by pressures created by the inflating or deflating of rubber bags, are largely specialized items, made on a custom basis. Some items, like molded plywood boat hulls, or formed plywood traps, may be stock items, handled by the trade.

The development of these flexible pressure techniques has greatly broadened the range of plywood availability.

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where lightweight and stiffness are important factors. This is another instance of the influence of heat reactive resin adhesives in utilizing heat not only to cure the adhesives, but also to add a bit of plasticity to the plywood.

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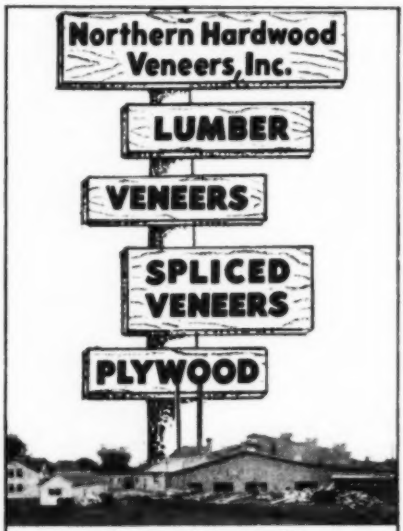

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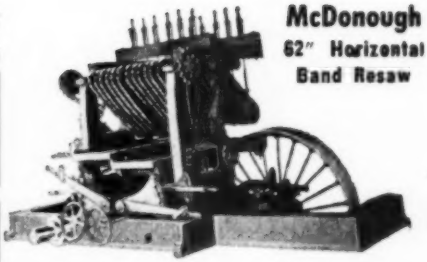

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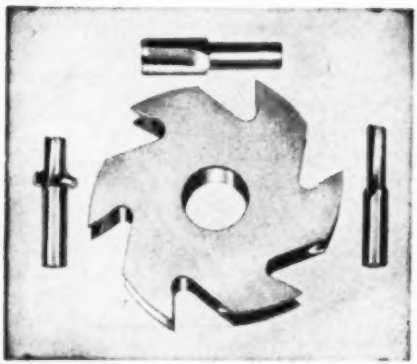

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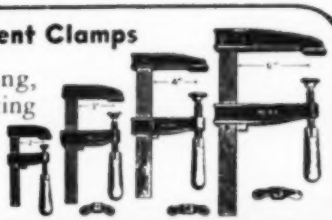

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VENEER and PLYWOOD

PART 24

PLYWOOD FLOORING

By Ned Bailey

ONE of the pleasant parts of my work has been watching the gradual change in the woodworking industry, its methods, machinery, fabricating materials and products. Needless to say, the changes have all been improvements that make possible greater enjoyment of many things, including our homes.

There is no part of the home that gets harder or rougher treatment than do the floors. Flooring has come a long way. When I was a boy flooring was pretty crude in some respects. Often it was made of softwood and as the softer wood wore away the knots would stand out. Then, on the "other side of the tracks," there were the ornate and beautiful parquet floors laid by real craftsmen. Today plywood has changed this picture in many ways.

Plywood paneling when used for subflooring provides a relatively level, smooth and jointless foundation on which to install a hardwood or linoleum floor. Plywood subflooring has many advantages. It serves as: insulation; protection against drafts from below; a deterrent to termites and other insects; and, in some communities, a horizontal diaphragm to resist high winds and earthquakes.

It has been found that one of the serious shortcomings of the ordinary top flooring of solid lumber (or finish flooring, as contrasted with the subfloor) is its definite tendency to shrink and swell widthwise, according to the surrounding atmospheric conditions. Solid flooring often shrinks when houses are heated, showing cracks between the individual boards. These cracks usually close up when artificial heat is not required.

When the finished flooring is made of solid boards and is poorly protected from moisture on the underside—so that it is exposed to moisture—the edges turn upward. This situation often develops when the flooring is laid on a concrete base. There are many other factors which indicate that plywood finished floors are preferable in most instances.

Plywood permits the use of wider floor units. This reduces the cost of laying and decreases the number of joints. Then, too, plywood flooring can be

Richness and beauty are shown in the plywood block flooring in this modern Lake Vista, New Orleans, home.

properly sanded at the factory before laying. This permits pre-finishing and eliminates the cost and complications of sanding after laying. Other advantages that are found in plywood finished flooring include tongues that are non-splitting—shrink and swell are practically negligible. The top ply can be thick enough to allow refinishing without exposing the tongue and groove, and parquet flooring can be made with plywood strips, reducing laying costs without sacrificing either quality or appearance. This brings me to the story of Higgins' bonded hardwood block flooring.

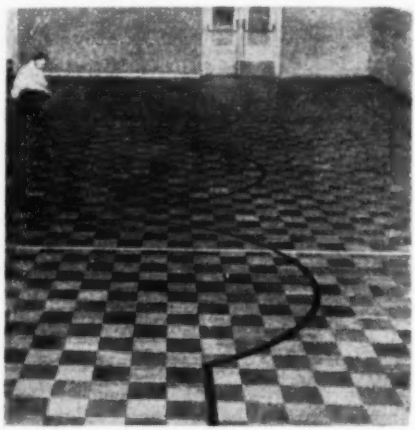
Many World War II plants were unable to weather the "swords into plowshares" conversion.

This is the story of a New Orleans company that made the change very well. Higgins, Inc., the famous boatbuilders, turned their fighting-boat know-how into making, of all things, hardwood block flooring.

Here's how the unusual phenomenon was accomplished. When the need for landing craft and more landing craft mushroomed the small Higgins custom boatbuilding firm into a half-billion dollar empire in six different plants in and around New Orleans, the company's engineers and chemists began experimenting with wood lamination and plywood. The thousands of landing craft and PT boats which flowed off the Higgins' assembly line attested to the success of the experiments in making tough, durable plywoods. Boat operators on all the fighting fronts sang praises of their "Higgins boats," which became as much a part of the GI jargon as "pup tents."

Higgins built a veneer mill, reclaiming marsh lands on the city's outskirts, intending that the mill should feed its sprawling aircraft plant at Michoud, La. There a contract for building cargo-carrying planes was to be carried out. These planes were to be built of a special plywood, also developed by Higgins. The plant tooled up and was ready for full production. Then the war ended.

The company put its huge plant and investment to good use after the war, however, and one of the items to which



School gymnasium, North Adams, Mass. The Higgins floor was laid 22 feet below grade level. After many years' strenuous use still in perfect condition.

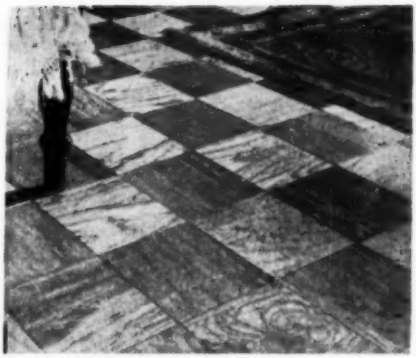
the production energy turned was a flooring block which could be manufactured easily from the high-grade plywoods being made in the veneer mill. Further tests and experiments, and Higgins was ready to market a sensational new flooring product.

The wood specialists used their techniques learned in producing plywood for fighting craft. They had found out how to cut the choice veneers out of specially selected logs; how to treat them before the laminating process; and finally, how to use special marine glues and phenolic resins in binding the plies into a solid piece. A giant, 750 ton press was designed for the plant. Oak veneers were bonded into a plywood which could withstand the greatest abuse imaginable.

Before placing the Higgins bonded hardwood block flooring on the market, however, extensive tests were made to determine the proper subfloors and installation techniques. It was found that the Higgins block could be placed over any subfloor—wood, concrete, steel—provided it had first been examined and found to be in good shape, particularly free of moisture. Higgins flooring was installed in many test areas—both by nail and by mastic—and found not to warp, buckle, or crack when properly laid with the approved material.

When Higgins experts decreed that the block was ready for the public, an extensive advertising campaign announced the durable, beautiful block to the trade. The response was immediate. The plant worked day and night to keep up with the demand, and it has been working full shifts ever since.

The block is pre-finished at the factory. After installation, a simple buffing or polishing produces a brilliant, ready-made finish.



The grain patterns show up well in this plywood block flooring in a bedroom of the Curtis Johnson home at Deep River, Conn.

The three-ply blocks are tongued and grooved for easy laying, no "rights" or "lefts" which slow up the worker. Since they do not expand or contract, it is not necessary to allow space between blocks. They can be scribed up tight to baseboards.

The blocks are 9 x 9 inches, one-half inch thick.

Installations throughout the United States have proved that Higgins blocks stand the tests of usage and looks. A gymnasium which is 22 feet below the earth's surface has Higgins block floor. This has all the resiliency necessary for varsity basketball, and has shown no signs of wear, or of any deterioration due to dampness. Homes having radiant heat under the blocks report no ill effects. Dance floor installations, as large an area as 10,000 square feet, still bring compliments as to the added beauty and character after several years of constant use. Homes, churches, apartments, schools, business offices, auditoriums and factories are now using the Higgins block. Yes, the line which once produced plywood for war craft is now turning out plywood for America's most satisfactory flooring.

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REDUCING ACCIDENT COSTS

NO business can afford to be uninformed of its accident losses. As they have come to realize this, many small businesses have followed the example of large industrial plants and have begun to analyze accident costs carefully. In order to do this, they maintain records of accident just as they do of production costs, production rates, and income.

Accident records bring to light many facts that the managers of small plants had not realized before. For example, the manager of one plant could not recall a single disabling injury in his plant over a period of a year. Yet a check with the company which insures his plant showed that three disabling injuries had occurred in the plant during that period. Since the manager had no record of these injuries, there was no way in which he could tell how much they had cost.

Determining a plant's injury rate

By keeping records of your plant's accidents, you will be able to learn how much the accidents are costing you, and you will also be able to compare your plant's injury frequency rate with that of other plants in the industry. Comparison of the plant's rate each quarter with the rates for previous quarters also will serve as a gauge of the progress of your safety program.

The standard for measuring a plant's injury rate is called the injury frequency rate. This is the number of disabling injuries per million man-hours worked. Briefly, the injury frequency rate is figured by multiplying the number of disabling injuries by 1,000,000 and dividing the product by the total man-hours worked. Expressed as a simple formula,

$$\text{Frequency rate} = \frac{\text{Number of disabling injuries} \times 1{,}000{,}000}{\text{Number of man-hours worked}}$$

A full explanation of the standard is given in "Measure Safety—Injury Frequency Rates"—Bulletin No. 102, available from the Bureau of Labor Standards, U. S. Department of Labor, Washington 25, D. C.

Suppose that three disabling injuries occurred in a particular plant during a three-month period. Is that a good record or a bad one? The answer depends on how many hours the em-

ployees worked during the period. Say that the employees worked 240,000 hours. Using the formula for the injury frequency rate, you would find that the plant's injury frequency rate, for the quarter, was 12.5. Comparison of this rate with the quarterly frequency rates issued by the Bureau of Labor Statistics would show that it is below the average, for manufacturing industries as a whole, of 13.5 in the first quarter of 1952. For specific industries, however, the rates ranged down to 1.7.

What are disabling injuries?

Injury frequency rates are based on disabling injuries, those that (1) cause permanent bodily impairment or (2) prevent the worker from returning to his job at the beginning of the next day or shift.

Under (1) are included injuries resulting in death or in any permanent impairment. A permanent impairment may mean loss of a member of the body or any part of it. Under (2) are included all injuries that result in temporary disability.

First-aid cases are not counted in figuring the frequency rate. Nevertheless, it is worth while to record and study them, since they often reveal accident hazards which might lead to serious injuries.

One safety engineer found that of 330 accidents studied, 1 resulted in a disabling injury; 29 resulted in first-aid cases that did not prevent the worker from continuing on the job; and 300 involved no injury to a worker. This study indicates that for every accident which causes an injury, there are a great many accidents which involve no injury at all. This is significant because any accident contributes to some production loss through broken machines or material, replacement or repair time, lost time of workers and supervisors, time needed for investigation of the accident, and many other factors.

What information do you need?

To eliminate accidents, it is first necessary to know how, where, and why they occur. For this, an accident investigation and report form is desirable. The style of such forms varies, but the questions usually follow this pattern:—

Department.
Name and age of injured person.
Occupation of injured person.
Type of work.
Date of accident.
What condition caused the accident?
What was done unsafely to cause the accident?
Description of accident.
Nature of resulting injury.
Preventive measures recommended.

A report of this type will provide the information needed to correct other conditions, similar to those that caused the accident, wherever they exist in the plant. It will also include information necessary to prepare workmen's compensation insurance papers.

By checking accident reports, you may find repeated accidents on a certain type of work. This would indicate some condition which needs correction. For example, if you find repeated cases of worker strain from lifting, you may need to change the system for handling heavy articles, improve the equipment, or train the workmen in proper lifting methods.

Learning the cost of accidents

To obtain accurate accident cost data, a careful study of all plant accidents is necessary. However, it is relatively easy to make a rough estimate of costs. For every dollar of compensation and medical cost resulting from a disabling injury there are, on the average, four dollars of indirect costs. This ratio may seem high, but actual plant studies have proved it to be a conservative average figure.

Suppose that you check your accident reports and find that during the past three months there were three accidents which caused disabling injuries, and that for these injuries a total of $200 was paid in workmen's compensation and $150 was paid in medical fees. The direct cost of the three injuries, then, was $350. The indirect cost (four times the direct cost) would be $1,400 for the three injuries. Thus, the total actual cost for these three injuries would be $1,750, although direct costs in most plants would be covered by the payment of workmen's compensation insurance premiums. However, the $1,400 of indirect cost alone would have paid much of the cost of plant improvements designed to remove the causes of such accidents.

If it seems doubtful that injuries which occur in a specific plant are as costly as this, a careful survey and study of the plant injuries (including every factor that involves loss) will give a more accurate basis for figuring the losses. In making such a study, here are some direct costs which must be taken into account:

Property damage and repair.

Material destroyed or damaged.

Machinery repair or replacement.

Shutdown, depreciation and tie-up.

Extra labor cost for cleaning up after the accident.

Transferring another worker to take the place of the injured employee, or hiring and training a replacement.

Unproductive wages paid to:

Employees who stop work to see what has happened.

Safety committee while it investigates the accident.

Employees who give first aid to the injured.

Employees and/or foremen who instruct replacement.

Foreman while he investigates, makes his report and secures a replacement.

Top supervision while receiving and filing report with insurance company.

Who should keep the accident records?

To insure proper maintenance of accident records, one person should be made responsible for seeing that injury reports are submitted promptly and that accident records are properly maintained at a central point. To a large extent, the size and organization of the plant will determine who should be given this assignment. In almost every instance, the immediate supervisor or foreman should be made responsible for submitting the initial accident report. In the very small plant, it is possible that a supervisor or foreman also will be given the responsibility for maintaining the central file of accident reports and data.

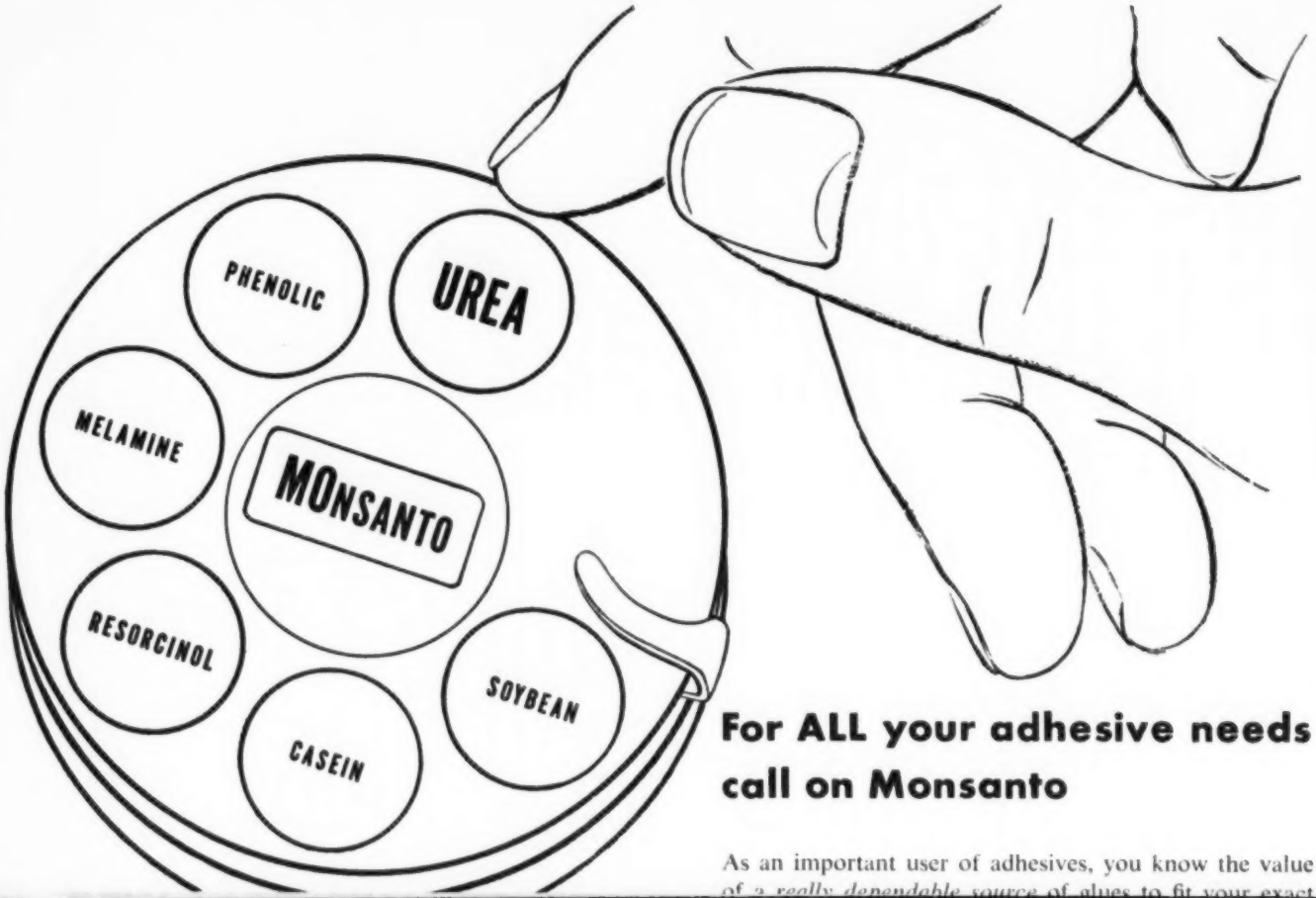
Put records to use

Accident, injury and cost records have given great value as reference data and for comparison with insurance company or other outside reports, as pointed out. However, they may also be used to advantage in other ways. Some of them are:

1. Used as topics for discussion in meetings with the foremen or plant personnel, the reports serve to give the employee a picture of plant conditions. When foremen and workers know what accidents cost, they are more likely to take responsibility for accident prevention.

2. Reports or graphs of accident experience can be used on bulletin boards or in plant papers or magazines to advertise the interest of management in the plant safety program.

3. Accident records can be used as a basis for competition between departments, recognition being given to the



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As an important user of adhesives, you know the value of a *really dependable source* of glues to fit your exact

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Urea . . . Monsanto has a comprehensive line of powder and liquid urea resins widely used for plywood manufacture. Also for edge gluing of lumber in clamps or by high frequency, and for tapeless splicing of veneers.

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Resorcinol . . . the only completely durable adhesives which will cure at room temperature. Used in ships' keels, laminated rafters, prefabricated housing, etc.

Casein . . . supplied as dry powders; particularly well adapted to assembly gluing, laminating, prefabricated housing operations, etc.

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For full information, and prompt service, call, write or wire: MONSANTO CHEMICAL COMPANY, Plastics Division, Room 5309, Springfield 2, Mass. (Monsanto in Canada: Montreal).

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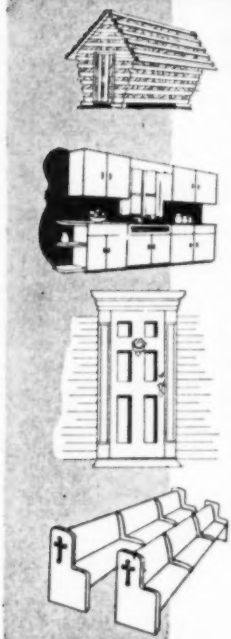
Monsanto's Western Division manufactures and supplies a complete line of plywood and woodworking adhesives for western industry from conveniently based plants at Seattle, Washington and Santa Clara, California. Phenolic, urea, resorcinol, protein and blend glues are included in this complete line for plywood production, edge gluing, and general assembly gluing.

For information on these adhesives, and on the entire line of Monsanto adhesives sold west of the Rocky Mountains, write to: MONSANTO CHEMICAL COMPANY, 911 Western Avenue, Seattle 4, Washington.

The big family of MONSANTO **adhesives**

SERVING INDUSTRY . . . WHICH SERVES MANKIND

FROM CORN CRIBS
TO CHURCH PEWS



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CONSTANT EXPOSURE to blizzards and rain, sub-zero cold and blazing hot sun, requires a glue with unusual resistance to extremes of weather. That's why manufacturers of corn cribs use Cellument.

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department showing the greatest progress in accident reduction.

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"One of the chief values which we are trying to preserve, and which our mobilization program is intended to protect, is freedom of enterprise, and a balanced, varied, national economy. It would be tragic indeed if the mobilization program itself should tend to stamp out individual initiative and competition, lessen the incentive for the individual businessman, and prevent the development of new strong businesses which must, perforce, commence as small ones."

—Telford Taylor, Administrator, Small Defense Plants Administration.

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Thermostat control

WATER JACKET TYPE

Heavy cast aluminum with attached bowl.

110-120 VOLTS or 220-230 VOLTS AC or DC.

One pint. One quart. Two quarts. Four quarts.

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Heavy sheet iron body
Porcelain enamel glue container

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One quart. Two quarts. Four quarts.

VULCAN ELECTRIC CO
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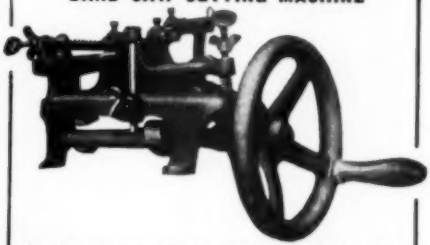
BAND SAW SETTING MACHINE



Simple yet accurate and efficient. Will do more and better work than any other machine of its kind.
The vise takes saw blades ⅛"—1½" in width and by automatically gripping the saw while tooth is being set, prevents twisting of narrow saw blades. The feed finger is adjustable to teeth with ⅛"—⅝" spacink, point to point.
All adjustments for different widths, teeth, etc. are regulated by but two thumbs screws.
Best working speed 100 revolutions (200 teeth) per minute, each revolution setting two teeth. A saw can be set in 4 to 5 minutes.
The machine can be fitted with a flat or V pulley for power operation if desired.

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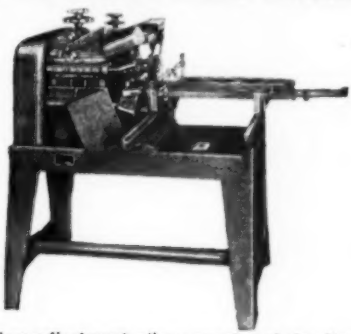

New adjustment allows exact and simultaneous adjustment of tenon spindles.
3 H.P. Motor.
3 Inch Blades
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Heavier Construction for greater accuracy

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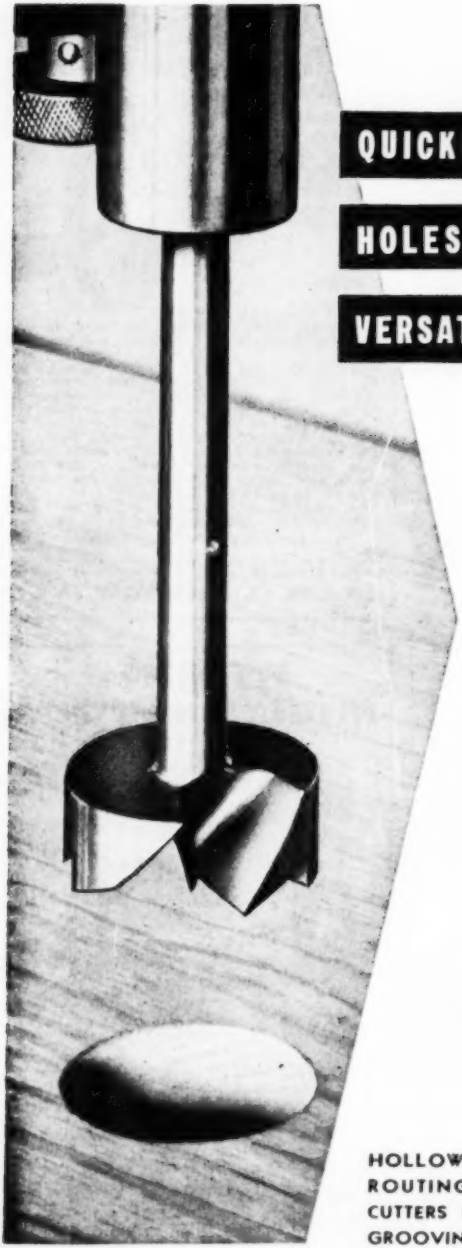

QUICKLY BORE SMOOTH HOLES UP TO 3" WITH THIS VERSATILE MULTI-SPUR BIT

A fast, smooth-boring bit for those special jobs beyond the scope of the usual machine bit. Bores any arc of a circle on an edge of a piece of stock. Operates well in either soft or hard woods and is often preferred for end-grain work. Smoothly bores veneered stock without tearing and will bore at an angle, overlapping, or at close centers without splitting stock. Stocked in sizes ¼ to 3". Write for facts. Greenlee Tool Co., 2131 Herbert Avenue, Rockford, Illinois.

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CUTTERS • COUNTERSINKS • MAKERS OF TECO
GROOVING TOOLS FOR TIMBER CONSTRUCTION

Mahogany For Tomorrow

By George N. Lamb
Secretary-Manager
Mahogany Association, Inc.

The business of trying to tell what is going to happen in the mahogany industry in 1953 would be a cinch if we had a good idea of what's going to happen to business generally and to the furniture and television industries in particular. Some folks say that business is going to be good the first half of next year, but that there will be or may be a mild recession toward the end of the year.

It is noticeable that there have been some postponements in the date of this expected slowdown in business and it could be that it may be delayed still further and possibly not put in appearance at all next year.

The current year has been only fair for the mahogany industry, based on postwar standards. The importation of mahogany probably will be about 20% below the banner year of 1951. Lumber inventories by the end of the year will be almost the same as they were at the end of 1951. Veneer industries probably will be 10% less than they were at the end of 1951.

The mahogany business started to pick up in September. In October it reached a high for the year. November figures will not be available for this report, but both November and December probably will equal that of October. In fact, it would not be surprising if the October-December level carried well into next year with little change one way or another.

The season, for the most part, has been a poor one in the tropics. When production plans were made a year ago the business outlook did not warrant taking chances with fringe producers and in uncertain areas where the natural hazards are unusually great the tendency was to play safe rather than to gamble for the highest possible production.

As a matter of fact, there really isn't any way to play safe in getting out mahogany in the tropics. This year is a good example. It has been another bad logging season in most regions where mahogany grows—not as bad as 1949 but bad enough.

In Africa the rains were prolonged and excessive, with the result that imports are off and mahogany log reserves average well below normal for this time of the year. Production in the American tropics has been affected not only by adverse weather conditions but, in certain areas, by unsettled or unfavorable economic or political tendencies.

The net result has been that the industry is going into the slack import season with the lowest reserve of raw material for both lumber and veneer since 1949. Any sustained increase in demand will not be likely to develop a real shortage in mahogany. It could, however, curtail the availability of certain items in both lumber and veneer.

Statistically, the weather factor for 1953 is in our favor. Since records have been available there have not been two bad production years in a row. This year should at least be a fair production year and, after all, that is about all we can expect. The dry seasons always are short and uncertain and the rainy seasons always play havoc with logging operation to some degree.

Competitively, the outlook for mahogany is satisfactory. The furniture and television business is enjoying a period of relatively high production and consumption. Unless severe governmental controls are clamped down on

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Dual Purpose

IRVINGTON-HILL
Automatic and Semi-Automatic
CUT-OFF SAW

New Operators Praise It!

Operator removes foot from control pedal—saw continues through complete stroke and returns ready for next cut. No confusion — less waste — more volume sooner — for all types of cut-up plants.

General Box's Mr. Embry writes: "With Irvington-Hill, there's less fatigue involved — the operator is more alert throughout the day."

Other users say: "So adaptable—we switch from single to full automatic stroking with flip of wrist"—"Plentiful reserve of speed-up to 90 cuts a minute."

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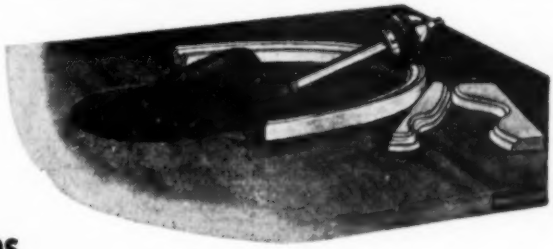
civilian production to keep defense production up to necessary levels, these industries should fare well during the coming year.

Last year there was a lot of talk that traditional mahogany furniture was "all through." This caused some manufacturers and dealers to swing further to contemporary styles, often in mahogany but also in other woods. This year it was discovered there was an especially good market for traditional styles in mahogany, particularly in new finishes in golden amber tones.

In the past year mahogany in modern design has swung away from blonde finishes more into the honey tones and

America's Fastest SANDER of Irregular Shapes



The New PEARSON Model "A"

Will not disfigure details of mouldings . . .

60% to 80% saving on sandcloth in sanding irregular shapes has been reported by many plants using a PEASON MODEL A SANDER. Other cost saving features include sanding one or more stepdowns at same time, saving several costly operations; sanding of inside radii of circles and very flat tapered moulding. It is one of the fastest and most efficient sanders for irregular shapes on the market today! With the Pearson Belt attachment this model can be converted to an all-purpose sander at a small additional cost.

SAVES 1 or 2 OPERATIONS

Standard equipment includes 7 metal heads and 14 cushions made of the finest grade rubber. Length of cushions range from ¾ to 4 inches; outside diameters, 3¼ to 7 inches.

SAVES 60 TO 80% ON SANDCLOTH

HUNDREDS OF SATISFIED USERS of our Sanding Machines are an indication of the outstanding quality of our equipment. You too can save time and money by turning to PEARSON!

FURTHER INFORMATION ON REQUEST

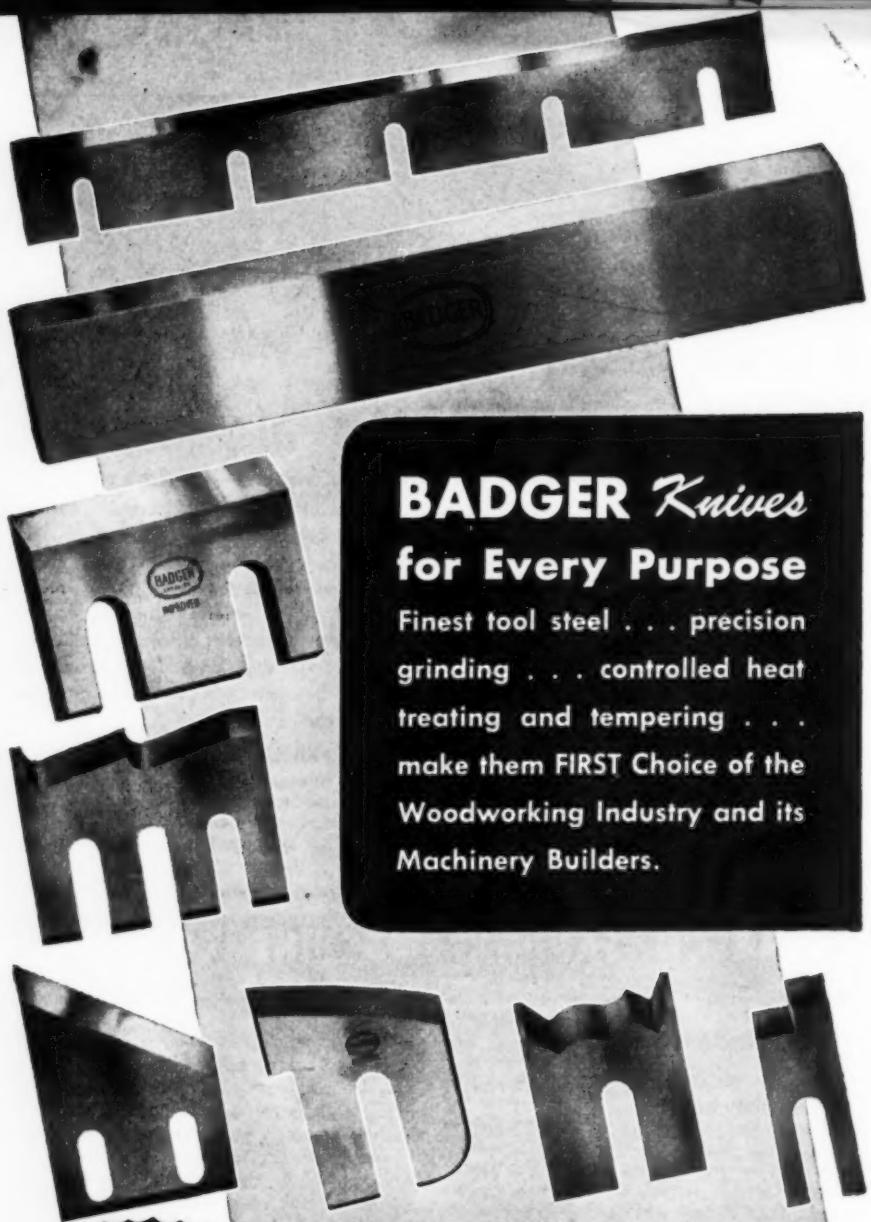
WE MANUFACTURE BLOCK & EDGE SANDERS, SCROLL AND DRUM SANDERS

PEARSON SANDING MACHINE CO., INC.
HIGH POINT, N. C.

more from the unnatural traditional red to the reddish brown, which is the natural color that age gives to mahogany with no stain at all.

The use of mahogany in 18th Century styles has been encouraged because these styles have been simplified from their original prototypes. In case goods especially, decorative turnings and carvings have almost disappeared. Chests have the fine lines of the 18th Century masterpieces, but all of the functionalism that can be found in a chest of modern design.

One of the most encouraging trends in the past year has been the increasing use of mahogany for modern designs. More and more people are realizing that mahogany has just as much to offer the present day designer and manufacturer as it did during the 18th Century when it was the wood of fashion in furniture. It has all of the beauty for which it became famous, but it can be had today in a wide variety of finishes not available to Chippendale and Sheraton.



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CUTTER HEADS
BADGER
KNIVES

Engineers to the Woodworking Industry

WISCONSIN KNIFE WORKS

BELOIT, WISCONSIN

BUSINESS AS USUAL . . . WITHOUT ANY LIGHT

There is a modest three-room home at 103 South Royal Avenue in Florence, Alabama. A sign attached to one of the center posts on the front porch announces simply, "Cabinet Shop."

Like most cabinet shops, you will find it completely dark at night. But don't be surprised if the quiet of the night is suddenly pierced by the screech of a table saw, the sound of a jointer or a lathe.

No, the shoemaker's elves haven't transferred to woodworking. The work is being done by a man who doesn't need light. In fact, it has been a good many years since he has seen the light of day. He is Louis B. Hartung, and he is blind.

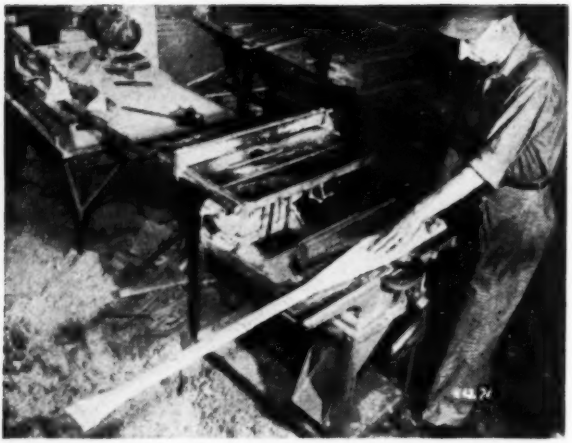
Mr. Hartung has been a pattern and cabinet maker for the past 44 years. He has been totally blind for the last 11 of those years. Before his sight began to fail, he worked for a lumber company. Here Mr. Hartung learned to use power tools; the same power tools he uses today, without sight.

Using a tool rest with a double mount to give a base parallel to the lathe centerline, Louis Hartung turns a table leg. One of his tables, finished except for the drawers, is shown in the foreground.

To position the wood for the saw, Mr. Hartung holds the piece against the T-guide, runs it up to the blade, then slides the wood past the blade gently until the nail touches the blade.

He did not gradually relearn to use power tools by touch as his sight failed. First, he taught himself the usual skills the blind need to take care of daily routines. Then, he taught himself the operations and adjustments of his power tools, and ways to measure assigned dimensions.

Selecting familiar measuring instruments, he uses them in new ways. To arrive at $2\frac{9}{16}$", for instance, he lays the blade of his tri-square on the saw table. Its width is $1\frac{1}{2}$". He then lays down his two-foot folding rule to give an added inch. To provide the $\frac{1}{16}$", he adds one section of his six-foot folding rule edgewise. Holding all these firmly together,



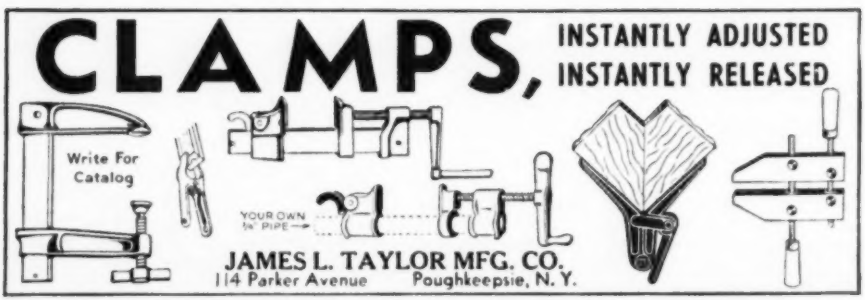
Working on a canoe paddle, Mr. Hartung puts the taper into the blade on a Delta jointer. When doing these in quantity, he sets the tables so that he cuts scarcely any wood at the beginning of the stroke, but at the end of the stroke he is removing a good ½".

he brings them up against the saw blade and moves the ripping fence in against them. He then tightens down the fence, removes the square and rules, starts the motor, and takes his cut.

For crosscutting and other applications of larger dimensions, Mr. Hartung uses another measuring method. As an example, to arrive at 19½", he unfolds three of the four sections of his two-foot rule. That gives him 18 inches. The width of his tri-square again adds 1½". The thickness of the nail tapped into the wood to mark his place gives him an extra $\frac{1}{16}$" margin for error. To position the wood for the saw, he holds the piece against the T-guide, runs it up to the blade, and then slides the wood past the blade gently until the nail touches the blade. Holding the wood in position against the T-guide, he draws the guide and wood back from the blade, removes the nail, turns on the power, and takes his cut.

On the jointer, Mr. Hartung usually cuts $\frac{1}{16}$" oversize so he can cut to fit afterwards. "Most pieces," he says, "fit between a couple of other pieces, so it's easy to cut and try till it's right."

Mr. Hartung uses his Delta lathe to turn table legs. A tool rest with a double mount gives him a base parallel to the lathe centerline from which to judge tapers and contours. Sometimes he uses a wooden rest with nails stuck into it to show him where to stop when he has to make sets of legs alike.



Mr. Hartung does all his shaping and molding on his Delta 10" table saw with all of the 15 sets of molding head cutters and dado heads in his collection.

Wardrobes, tables, cedar chests, canoe paddles and baseball bats are the principal items Mr. Hartung makes.

He makes canoe paddles 100 at a time on orders from a sporting goods dealer. Before the finishing strokes with a spokeshave and sandpaper, he performs all roughing out, shaping, and makes almost a finished paddle with 32 Delta machine operations.

Mr. Hartung has demonstrated Delta tools at the state fair in Birmingham on more than one occasion.

He figures it takes him from 50% to 100% more time than a sighted man would need for the same job. But, "Having nothing else to do but work, and no place to go but an occasional trip uptown to a restaurant, when I get to the point where I can't stand my own cooking," Mr. Hartung doesn't have to worry about making his money within a 40-hour week.

F.P.R.S. ANNUAL MEETING

Memphis has definitely been set as the location for the 1953 meeting of the Forest Products Research Society. Here are the subjects to be discussed at this meeting: Quality Control; Wood Finishing; Wood Composition Board; Forest Products Education; Glues and Gluing; Wood Machining and Equipment; Packaging; and a general interest session.

TECO RESEARCH

Wood products with a valuation of at least $20 million have been affected beneficially by research conducted at the Lumber and Wood Products Laboratory of Timber Engineering Company, affiliate of National Lumber Manufacturers Association, since its establishment in 1943, according to reports.

Many of the specific benefits from Teco research are cited in the new 32-page booklet, "Advancements in Wood Research and Timber Engineering," published this month by the industry-owned organization.

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Large cyclone collector is part of Dixie installation at Ox Fiber Brush Co., at Frederick, Maryland

Efficient dust control means greater output for less cost in any plant where industrial dust is a problem. Thousands of woodworking plants big and small are today benefiting from tailor-made dust removal systems designed and installed by Dixie. If you have a dust problem, consult a Dixie engineer for expert direction . . . There's no obligation.

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THE UNIVERSAL FLEXIBLE
AIR PRESSURE SELF EDGING ELECTRODE
Both Straight Edges and Compound Curvatures

Process No. 1: Woodwelder Self Edging (Synchro-Tuner Controlled)

Low cost installation of Formica, Micarta, Consoweld, Textolite, Insurox, Lamicoid and other overlay decorative plastics plus veneer welded by the Woodwelder process.

Glue: "Radio-Bond" Resin
Special Fast Heat Sensitive Resin

Production tested and recommended by Woodwelding, Inc. May be coated on plastics, allowed to dry and re-flow with Woodwelder air pressure electrode.

Synchro-Tuner: Eliminates operator control of Woodwelder during heating cycle.

The electrode is self-expanding with air pressure and has an air pressure regulator to adjust the P.S.I. during the Woodwelding cycle.

Process No. 2: Resistance Heating—Flexible (Thermostat Controlled)

The electrode is flexible, consisting of woven Nicrome resistance wire embedded in a special rubber self-pressure heating pad and can be formed to various shapes for the self-edging of plastics and veneer edge banding. The caul board is shaped to back up pressure of self-expanding electrode to apply pressure to the glue line on self-edging applications when connected to 110 volt single phase current.

The speed of cure ratio of Process No. 1 over Process No. 2 is 10 to 1.

Radiation Certificate attached in compliance to FCC Docket No. 7858.

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A BOXING LESSON

This is the title of a new booklet by the Auto-Nailer Company, 269 N.W. Marietta St., Atlanta, Ga. The 12-page booklet completely illustrates the manufacture of skids, shooks and crates with Auto-Nailer equipment. One page of blueprint diagrams shows construction of particular shapes and kinds of boxes. Another page illustrates the various features of the machine and the back cover shows typical assembly operations.

TWENTY-FIFTH ANNIVERSARY

The new year marks the start of a quarter century of carbide manufacturing for the Carboloy Department of General Electric Company, Detroit, Michigan.

In 1928, the company, then Carboloy Co., Inc., became the first American producer of cemented carbides. Since that time, it has added numerous other created metals, including permanent Alnico magnets, Hevimet and chrome carbide.

RADIAL BORING MACHINE

This bulletin, which has been issued by the B. M. Root Co., York, Pa., describes the D150 foot and hand feed radial boring machine. Dimensioned views showing all minimum to maximum spindle adjustments are included. The ball bearing feed works are illustrated by large cutaway views. New equipment not carried before consists of: universal type table equipment which includes an adjustable air clamp; special back fence with reversible end stop; and air operated chip blower to remove chips from table after each boring stroke. Single geared radial heads and fixed and adjustable multiple cluster heads are also furnished as interchangeable units on the 1 h.p. 3600 r.p.m. electric spindles. The machine is used as a dowel boring machine for all types of furniture frames.

WOODWORKING CUTTERS

A special catalog of bits and cutters for the woodworking industries has just been issued by Onsrud Cutter Manufacturing Company of Libertyville, Ill. It contains a complete illustrated listing of bits and cutters which have been specially designed for efficient production.

The book contains many helpful diagrams and practical working instructions, as well as the specifications and prices on hundreds of bits and cutters of various types.

HISTORY OF CLAMPS

"Clamps—Their History and Their Uses" is a 16-page booklet recently published by the Cincinnati Tool Co., Cincinnati 12, Ohio. The history of clamps begins with the Egyptians. Types of clamps used throughout the centuries are shown and explained.

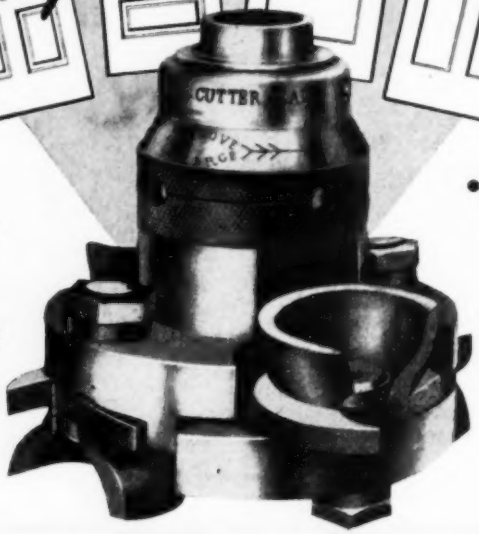
The second section of the book gives suggestions on the use of clamps and illustrates them. The company has more than 226 sizes of their various clamps. The concluding section of the book on the care of clamps should prove helpful.

SAWDUST SUSPENSION BURNER

A new folder describing the Vastine system of suspension burning of sawdust and shavings in boilers has just been issued by the Vastine Engineering Co., Inc., 1004 Desplaines Avenue, Forest Park, Illinois. This illustrated brochure features the automatic disposal of wood refuse from the machines to the boiler firebox. The method of attaining smokeless operation and safety from fire hazard is fully described.

Many firms are replacing their old equipment with new. If you have old equipment which you wish to sell, try a classified ad. It can be sold.

for high speed, top quality door production!



• WITH EXCLUSIVE ALL AROUND CLEARANCE CUT!

• WILL NOT CHIP THE WORK AT THE FASTEST FEED!

SHIMER DOOR HEADS

4, 6, and 8-bit model Shimer Door Heads give you all-around clearance cut to prevent chipping the work—at the fastest feeds—plus expansion feature for wider or narrower panel grooves! Equipped with long-lasting Shimer Circular Bits!

there's a Shimer Head or Cutter for every cutting problem...

WRITE FOR YOUR FREE COPY OF OUR ILLUSTRATED PATTERN BOOK!

SHIMER

SAMUEL J. SHIMER & SONS, INC.
85 RACE STREET ★ MILTON, PENNA.

MATERIALS HANDLING

IN THE WOODWORKING INDUSTRY

By Jerry Schuette

IN the past ten years modern material handling methods have developed all down the line, from forest to finished product. Greatest lumber demands fell on sources of greatest available supply. Hence, the west led in modernization or mechanical handling revolution. The south saw, appraised, then followed. The north then realized that it had to modernize or die as an industry. Developments have been rapid in recent years, and we all are now more cost conscious than ever before.

Old methods, old tried and true designs were accepted out of habit as the best way to do a job. Improved methods and machinery were expensive. When demand for lumber products was high, and business good, the industry could afford old costly methods, and had little time to plan a modernization program. When demand fell off, and business slumped, such a program was too costly to consider.

Some had the foresight, the courage, and/or means to act. Equipment and processing machine manufacturers were improving designs right along, but the market for their products was sorely limited for many years.

I mentioned modernization program. Some operators invested in one or more of the modern machines, but didn't avail themselves of full advantages such installation offered, because there was no integrated program. Processes before and after the new unit were not geared to it.

Electric hoists, hand and power low lift trucks, high lift fork trucks for yard and plant use, conveyor, and load levelizing lifts are accepted methods in the metal, ceramics, and paper industries, but are only now finding their proper place in the lumber field. Once the advantages such equipment offers are experienced, one is quick to develop the system. A general survey of industry claims that material handling costs account for thirty to thirty-five percent of product cost. Materials handling adds nothing to value, only to cost. I believe the thirty to thirty-five percent figure is conservative for the woodworking industry.

Unit load handling of lumber in yard, storage, and kiln drying are major recent advancements. Conveyors and lifts are designed as part of, or accessories to, some modern processing machinery. If the same principles involved in these improvements were studied, analyzed, and applied to other operations in your plants, the benefits could be extended materially.

Old handling methods cause congestion in plants, and when new methods are considered, this congestion is cited as the reason modern methods can't be used. Many plants have developed

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like "Topsy," they just growed and growed! In growing, materials flow and processing machinery placements developed without the efficiency straight line production offers. Revising current flow lines now is a costly thing to consider. Ultimately, it would pay off, but in many cases, an expert analysis and survey of present conditions would pay off by taking fullest advantage of what might be done under these conditions. Cost of rearrangement might seem high, but would be well worth the investment.

Proper materials handling practices will reduce costs through manpower saving, increased storage capacity in existing space, greater safety for the men and reduced damage and waste.

Cut stock, semi-processed, can often be handled on pallets or skids, stored high in racks, or sometimes without racks, by using high lift fork trucks. Handling and storage of volume materials can be improved at lower cost through methods proved in other industries with similar products. You could save floor space for storage, save handling costs into and out of storage, improve control of rotation of materials subject to deterioration, and probably reduce purchase costs by buying in larger units.

In your industry, "to the machine" takes you back into the timber. The modern power saws, crawler cranes, diesel cats, power winches, and other modern mechanical equipment have multiplied man hour production. In 1942 lumber consumption in the United States was 43.4 billion board feet. The previous high consumption year was 1925 with 40 billion board feet. It is estimated that less than two-thirds as many man hours produced the larger figure. This is attributable to improved methods.

Log handling, from source to saws, has seen remarkable advances in recent years. The very nature of the log appears to limit any major advances over current modern methods. From the pond or cookers, onto the bull chain, and through the saws, you seem to use, or are aware of, latest equipment. The size of the operation determines the type and speed of saws used.

The high speed saw carriage has pointedly changed production figures. It is the pacemaker in plants which have subsequent operations, geared accordingly, through the use of improved methods and equipment. "To the machine" phase, and "from the machine" are not as good as "through."

Some of you receive lumber, not logs. The costly and tedious job of handling it from the car to yard stacks, kilns, storage or production is often accepted as a necessary evil. Gondola or flat car shipment hasn't proved sat-

isfactory, so the box car or closed truck is the accepted shipping method. A power conveyor for carrying the lumber from the car or truck to stack has recently been introduced. Grading and tallying can be done at receiving end of conveyor; lumber is then carried to one or more piles. Unit loads are arranged for handling with high lift fork truck.

Full or semi-automatic equipment is available for feeding lumber from unit loads into and through the processing machines.

The "through the machine" phase of modern methods has been adequately handled by your woodworking machinery builders. They offer safe high-speed machinery complete with power feed, discharge and travel to next process. Where a conveyor is not used for pieces in process from one operation to another, four-wheel, platform, push type, or some type of mechanical lift truck and skids are needed. Oft-times surplus runs, not needed for immediate production, are piled on trucks, skids or pallets, then transported to storage for future use. Here the use of pallets or skids, a high lift truck and storage racks eliminates the old method of hand-unloading, hand-piling into storage, and hand-reloading of truck when these parts are to be placed in production. Unit loading and storage eliminates three hand operations necessary by the old method. (Note slow- and fast-moving inventory items, and related problems and solutions.)

Large panels, frames, and doors present a handling problem. A hand or power lift truck with a long lifting bed or frame used under a long skid platform has proved to be the best solution. Proper piling of these long pieces on the skid can improve safety and efficiency. Reducing load overhang beyond rear axle of truck

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16 different styles of Woodsman carbide tipped blades for any application, guarantees more efficient and profitable saw operations.

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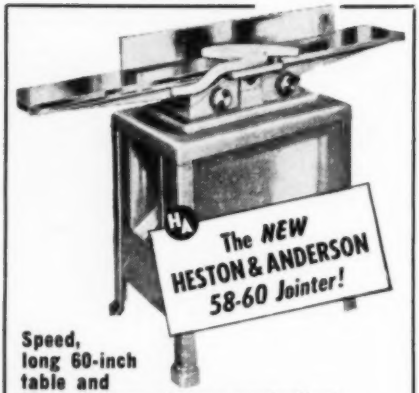

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as pile height increases offers greater load stability, easier rolling, and lower truck maintenance.

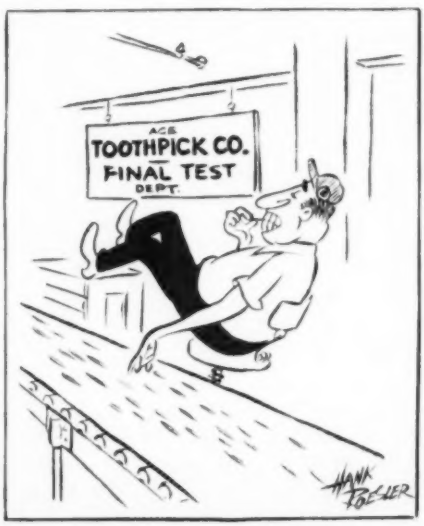
I mention and recommend the use of racks for multiple tier storage of loose or unstable loads. Flat boards, cases, crates, boxes, kegs and drums can be tiered on pallets with no need for racks.

All industry is modernizing through mechanization. In many cases equipment has been offered and purchased without proper planning. Installation of a new unit has often been made on a basis similar to replacing one spark plug in a car instead of replacing the whole set, having a general tune up, and deriving full benefit therefrom.

Modern equipment, too, demands a new conception of maintenance. This must also be systematized. Many benefits can be derived by a planned maintenance program to care for older types of handling equipment. Use and care of proper types and sizes of trucks, wheels and casters is important, if you wish to do the best with what you have. Waiting for the wheel to squeak before applying grease is a costly policy.

Many firms have appointed a man or committee from among their qualified employees and have assigned to them the project of surveying present operations. Their findings are analyzed by management, as also are their recommendations on improvements. A materials handling department is then established, and is henceforth responsible for that phase of the plant's operations. A standard maintenance policy is set up, tied in with this department. Department heads cooperate, as do the men under them. This cooperation includes suggestions on better methods, greater safety and needs for repairs or replacement.

The size of your operation dictates the extent to which you can go, but the basic principle involved pays off, even in comparatively small plants.



Industrial engineering firms specialize in surveys. Manufacturers of lumber processing machinery and materials handling equipment, including conveyors, have men qualified and willing to help you save money. Proper equipment, properly used, is not an expense. It's an investment, and usually pays greater dividends than you expect.

The End

DUST CONTROL

High efficiency dust collection in woodworking plants is the subject of a new bulletin just published by American Wheelabrator & Equipment Corp., 1344 S. Byrkit St., Mishawaka, Indiana. It shows how Dustube cloth-tube-type collectors are being used in industrial installations to improve plant housekeeping and reduce certain operating costs at the same time.

TANNEWITZ AUTOMATIC GAUGE
for Swing Saws
SAVES $30 to $50 A MONTH IN LUMBER AND LABOR
30 Days Free Trial
ORDER NOW OR SEND FOR CIRCULAR
TANNEWITZ WORKS
GRAND RAPIDS, MICHIGAN
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STOP DUST

DUSTKOPS — **20 Models**
UNIT TYPE — 300 to 3600 cfm
LOW COST — ¼ hp to 5 hp

AVAILABLE FROM STOCK

For: Grinders, buffers, polishers, woodworking, lint . . . All Dusts.

Send for Cat. 605a; describe problem.

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IMPROVED Ball Bearing Shaper Collars

Friction between collar and pattern entirely eliminated — no more burning.

Outer rim is independent of the slotted collar and revolves with the feed of the work.

Collars can also be supplied without grooves for use with solid steel cutters.

Give diameter of collar and size of hole.

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SINCE 1880

CHAIN
MORTISE
CUTTING EQUIPMENT

A TOOL ROOM
Product

By A Tool Room Expert!

Use our double bearing guide bars for flat bottom mortises. The riveted plate and bearing construction provides the utmost in strength and interchangeability. More than 90 standard sizes in the FIELD line of cutting equipment. We are well-equipped to furnish special sizes like the above bar in many widths and lengths.

Write for complete information on our chain mortising equipment.

WILLIAM H. FIELD CO.
327 Dorchester Ave • Boston, Mass.

Names in the News

The M and M Wood Working Company has appointed **A. T. Nelson** as manager of its plywood divisions. Nelson has been identified with the Pacific Northwest plywood and glue industries for 33 years.

Gus A. Seidel, vice president of the Splicedwood Corporation, has been elected chairman of the Upper Mississippi Valley section of the Forest Products Research Society.

New manager of the Wood Preserving Division of Koppers Company, Inc. is **Walter P. Arnold.** This position was formerly held by **Harry R. Condon** who is retiring after 25 years with the company.

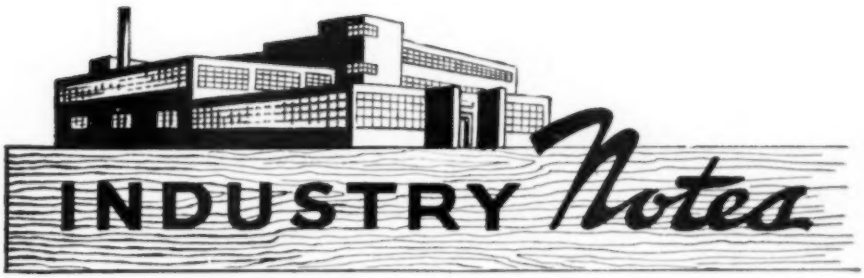
The Carborundum Company, Niagara Falls, N. Y., has appointed **F. J. Ellebrecht** as manager of its central merchandising sales zone. Mr. Ellebrecht will maintain an office in Niagara Falls, New York.

B. W. Kinderman has been elected comptroller of DeWalt Inc. This firm also announces the appointment of **Douglas B. Beath** as district manager for the Des Moines-Kansas City area.

The Columbia Machinery and Engineering Corporation has recently named an assistant sales manager. He is **William O. Staubitz.** This firm has named **Warren G. Rosendahl** as director of manufacturing. In this position he will coordinate company manufacturing operations, including supervision of the new products division.

William G. Prasse has been elected president of the Oilgear Company, Milwaukee, Wisconsin. He succeeds the late **George H. Fobian.** Elected vice president and director of the company is **Frank G. Kuhagen.**

The Rockwell Manufacturing Company has announced the appointment of **A. P. Schmauch** as general manager of Rockwell Tools, Inc., Columbus, Ohio. Mr. Schmauch succeeds **E. W. Ristau,** who was recently appointed director of sales and advertising of Delta Power Tool Division.



COLUMBIA BUYS TWO FIRMS

Columbia Machinery and Engineering Corporation has acquired all of the assets and manufacturing rights of the Bridgeport Safety Emery Wheel Co., Inc., of Bridgeport, Connecticut, and the Diamond Machine Company of Stratford, Connecticut, we are told.

Columbia plans to integrate the two Connecticut companies, for the time being, with its Hamilton, Ohio division.

Chairman of the Board James A. Walsh stated, "We shall continue the manufacture of the full Bridgeport line of medium and heavy hydraulic face grinders, vertical spindle surface grinders, knife grinders, pedestal grinders and abrasive cut-off saws. For the present, our activities in connection with the Diamond Company will be limited to field service. We plan to engage in the development and manufacture of better grinders, specifically, for knife sharpening, and, generally, for metal working.

This action brings together three of the oldest machine tool producers in the country.

Columbia presently is one of the leading designers and builders of heavy Power Squaring Shears and Bending Brakes, low and high pressure Hydraulic Laminated Presses for the furniture, plywood and hard board industries, Veneer and Paper Cutters and other special equipment.

The company expects to increase its volume approximately fifty percent by the addition of the Bridgeport line.

CONTEST PAYS OFF

The Porter-Cable Machine Company of Syracuse, N. Y., manufacturers of some 30 different portable electric tools, knew that the hundreds of thousands of people who buy these machines use them for many ingenious purposes, but the company never hears about them. To encourage owners of these tools to send in their unique applications, Porter-Cable decided to run a continuous series of contests in which a new set of prizes is awarded every six months.

A copy of the contest announcement and rules is packed with every machine shipped, and it is also promoted through the company's thousands of dealers across the nation. The results of the first semi-annual contest were amazing. Porter-Cable received an avalanche of ideas. These were accompanied by drawings, photographs and even working models. All ideas which prove practical will be incorporated into the instruction manuals which go out with future machines.

VENEER ASSOCIATION ELECTS

Joseph F. Mertes, president of the R. S. Bacon Veneer Co., Chicago, was re-elected president of the Veneer Association at the annual meeting.

Also elected officers of the association were: vice-president, J. B. Alexander, president of Alexander Wood Products, Athens, Ga; and secretary-treasurer, Robert T. Thompson, vice-

Smooth Dovetailing

WITH

WYSONG & MILES BITS

For longer life and greater accuracy insist on Wysong Dovetail Bits. Six popular sizes in carbon and high speed steels available from stock.

WYSONG and MILES Co.

GREENSBORO, NORTH CAROLINA

DOVETAILERS • MORTISERS • SANDERS

president of Thompson Mahogany Co., Philadelphia.

Charles E. Close, who has been with the association for 17 years, was re-elected to the post of executive vice-president.

Summing up sales for the calendar year of 1952, Mertes reported that, while business was off a bit early in the year, the recent surge in television and furniture sales will probably bring the 1952 total shipments of veneer close to a billion feet.

BIG FOUR SOLD TO YATES-AMERICAN

Yates-American Machine Company has announced its acquisition and transfer to Beloit, Wisconsin, of the manufacturing facilities of Big Four Carbide Tool Company, a Cincinnati manufacturer of "Big Four" carbide tipped

Engineered

FOR TUNGSTEN CARBIDE

MEYCO carbide tipped circular saws ARE DIFFERENT, because the blade and teeth have been engineered for tungsten carbide. It is this know-how of building a carbide tipped saw from the ground up, that has made MEYCO saws popular and accepted as the standard of the industry. MEYCO saws will run longer between grinds, give you more regrinds, produce smoother cuts and save you many times their small extra cost over ordinary circular saws. Write for fully descriptive catalog and price list No. 37.

W. F. MEYERS CO., INC., BEDFORD, INDIANA

saws and other carbide tipped cutting equipment. With this new addition, Yates-American will be in a position to supply a complete line of cutting equipment for all woodworking needs.

The carbide tipped saw, which has found wide acceptance in the woodworking field during recent years, has several advantages over conventional saw equipment, both as to the quality of its work and its long life. Besides its woodworking applications, the carbide tipped saw is used in the cutting of wood substitutes, compositions, plastics, etc.

S.P.M.A. SETS STANDARDS

Formal announcement of the Southern Plywood Manufacturers Association program of "Certificates of Inspection for Glue Bond Quality" was a highlight of the association's recent meet-

AIR POWERED DRILL UNIT FEATURES ELECTRICAL CONTROL, HYDRAULIC CHECKING

The Bellows HYDRAIR POWER FEED DRILL is a precision air powered drilling device providing rapid advance, controlled feed, and rapid return. It will handle drills up to ¼" and will drill to a depth of 4".

Standard rated free spindle speed 2800*. Rated ¼ h.p. Air driven spindle; air-powered, hydraulically checked feed; electrically controlled cycle. Mounts at any angle.

*Other Speeds Available on Special Order.

Get This FREE BOOKLET

Specifications, technical data, diagrams of The Bellows HYDRAIR. Address: The Bellows Co., Dept. WD153 Akron 9, Ohio

The Bellows Co.

AKRON 9, OHIO

1462

ing, held at the King and Prince Hotel, St. Simons Island, Georgia. These certificates of inspection are a planned outgrowth of the quality control program of the Southern panel makers, which has been in effect over four years.

Beginning January 1, 1953, the Southern Plywood Manufacturers Association will issue "Certificates of Inspection for Glue Bond Quality" to those hardwood plywood mills which can qualify for them and maintain the high quality standards required for their continued use. These certificates, designed for use with invoices and bills of lading, will cover hardwood plywood manufactured in accordance with the "Inspection and Testing Standards" of the Southern Plywood Manufacturers Association and the specifications as established by the U. S. Department of Commerce, Hardwood Plywood Commercial Standard CS35-49. Specific information concerning these standards

CAN'T KID US
WITH "DOUBLE" TALK

SOUTHERN
WOOD
SCREWS
(Slotted or Phillips Heads)

feature single-thread construction

Southern produces only wood screws with rugged *single-thread* construction. For the Federal Bureau of Standards, in exhaustive tests, has proved beyond a doubt that *single-thread* screws with full-size shanks have far greater holding power than any other type. Government Specifications insist on single-thread, full-shank screws. Manufacturers using other types are disqualified from receiving government orders.

Southern brings you screws with sturdy, full-size shanks; sharp, cylindrical, cut threads; gimlet points with plenty of "bite"; and clean, precision-milled slots. Made in a full range of types and sizes and a wide variety of finishes. Large stocks available for immediate shipment. Write for our catalogue today.

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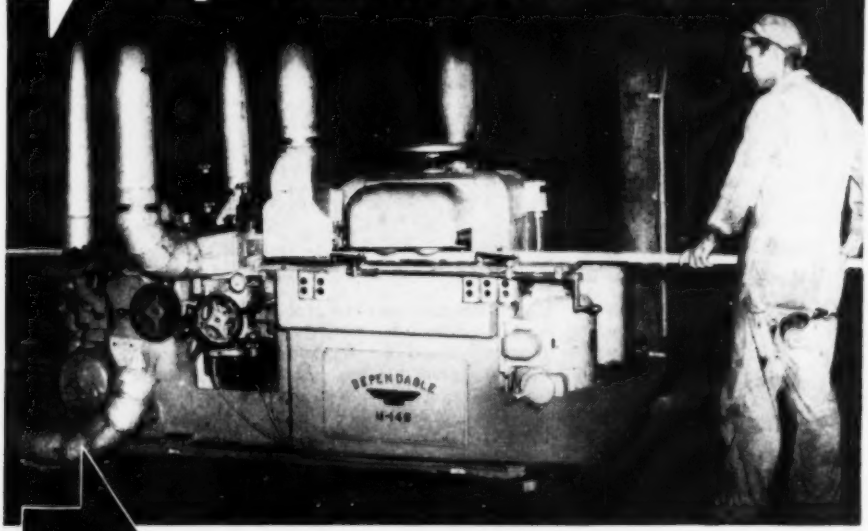
and specifications is available from the Southern Plywood Manufacturers Association, 65 Peachtree Place, N.E., Atlanta, Georgia.

FRANK CORTRIGHT RESIGNS

Frank W. Cortright is resigning from his position as executive vice-president of the National Association of Home Builders. Frank has been ill during the last year and the heavy duties of this office are too much for him to handle until he has completely regained his health.

His resignation, which has been accepted by the association, becomes effective March 1, 1953. John Dickerman, assistant executive vice-president, will carry on the functions of the association as he did so capably during the long months of Frank's illness. Highlight of the year for this association is the January convention which will be held in Chicago.

Best Moulder For Detail Work says WATERFRONT LUMBER



DEPENDABLE Electro-Unit Drive

Gives Faster Set-ups—Easy to Operate

Here is what the Waterfront Lumber & Shipceiling Corporation of Newport News, Va., say about their Dependable Moulder:

"We are now into our tenth month of operating the new Dependable M-146 Electro-Unit Drive Moulder and would like to advise without any qualification whatsoever that the machine is well built and is giving splendid service.

"It is used in our planing mill for the manufacture of mouldings which are sold to our retail trade.

"We do not hesitate to highly recommend this moulder to anyone in need of a similar machine."

Dependable designs and manufactures Moulders, Rip Saws, Knife Grinders, Head Grinders, Knife Jointers, Knife Balancers, Heads and Knives. Write for full information and name of nearest dealer.

Dependable

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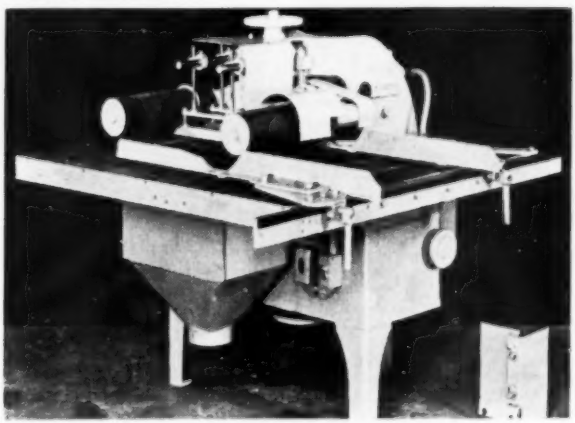
WOODWORKING MACHINERY

GREENSBORO, N. C., U.S.A.

EQUIPMENT and Supplies for the WOODWORKING INDUSTRY

XL SPECIAL BOX RIPPER



Smithway Machine Company, 4617 Airport Way, Seattle, Washington, announce a conversion of their XL ripper for the specialized ripping problems presented in the manufacture of box shook and cleats. Saw table area has been increased to accommodate two fences, one fence operating on each side of the saw. The feed roll system incorporates the use of long flexible rubber feed rolls to extend over this additional table area.

Assuming that a box top, side, or bottom is to consist of several boards of random widths, the entire aggregate of boards can be fed through the machine and ripped to desired net dimension. This machine handles stock up to 20" wide on left-hand (aggregate ripping) fence. Right-hand fence is used for removing crooked edges, back, etc.

The XL does all conventional ripping, plus the special ripping necessary for box and pallet making. One outstanding claim made is the ability to gang-rip stock as short as 4" on a regular production basis.

When used for conventional ripping, the XL will rip stock up to 4" thick, with feed speeds as high as 190 f.p.m. An 8" long saw arbor, directly connec-

Foley Sharpened Saws

CUT HIGH LABOR COSTS

NEW MODEL 61 FOLEY AUTOMATIC SAW FILER

Production Jumps 25% to 40%

when your operator's saw is sharpened on a New Model 61 Foley Automatic Saw Filer. His saw will cut faster, smoother, run cooler and *stay sharp longer.*

Prove it by 30 DAY TRIAL in Your Own Shop

Try the Foley Automatic Saw Filer for 30 days in your own shop. You'll be under no obligation. See how it sharpens your hand saws, band saws up to 4" wide and cross-cut circular saws 3" to 24" in diameter. Notice how the Foley Automatic Saw Filer automatically corrects uneven teeth caused by poor filing and restores them to even size, shape and spacing. You'll say the Foley Automatic Saw Filer is a "must" for every well run woodworking plant.

Free Book Tells How

The instruction book that goes with every Foley Automatic Saw Filer is yours for the asking. Here you can read how inaccuracies are eliminated through simple and positive adjustments. This book does a double job . . . helps you cut production costs with better cutting saws and shows you how to lower your saw maintenance costs.

FOLEY MFG. CO., 3351 N.E. 5th St.
Minneapolis 18, Minn.

Please send instruction book and information on 30-day trial offer.

Name .....

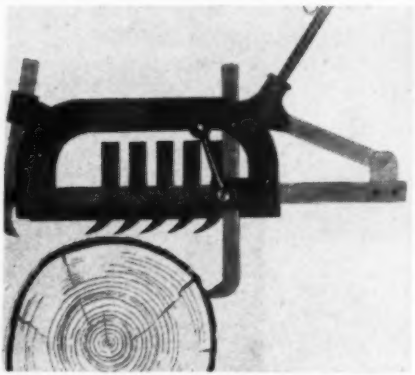
Address .....

ted to 10 h.p. or 20 h.p. motor, permits gang ripping with multiple saw setups.

NON-DEFACING CARRIAGE DOG

A new non-defacing carriage dog that will accommodate any size cant from 3-1/2" to 20" without adjustment has recently been announced by the McDonough Manufacturing Company of Eau Claire, Wisconsin.

This non-defacing carriage dog has a series of five teeth so arranged that those below the top of the piece to be held are automatically pushed back out of the way and the one above the piece will hold it firmly when the



closing lever is pulled down. This lever works on a positive cam action which locks the dog and holds the piece firmly until released.

An upper spur dog is also provided which can be adjusted to hold logs up to 40" in diameter.

It is claimed that the simplified action of the new McDonough carriage dog saves considerable time because no adjustment is necessary. It also improves the quality of sawing because of the positive grip with which it holds the cant or log.

NEW HIGH FREQUENCY GENERATOR

Radio Receptor Company, Inc., 251 W. 19th St., New York City, has re-

cently installed one of its new automatic power control Thermatron 20 kw high frequency generators, together with a batch-type press, in the plant of the Sensenich Corporation, Lancaster, Pa. Specially designed for high production edge bonding, the Thermatron unit, shown at the left in the photograph, masterminds the complete job. Its large power capacity and automatic controls can accommodate the wide variety of loads run at the Sensenich plant.

Under actual production conditions it has been found that Thermatron's automatic power control has reduced production time by at least 33-1/3% on runs of 8/4 stock and larger, where the glue line area is extremely large. Of course, in the handling of small stock where much less power is required, time conservation through use of the automatic controls is not so great.

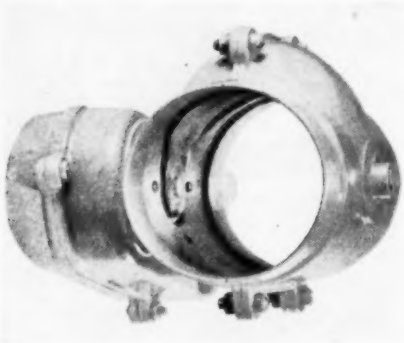
Indicator lights and meter readings on the control panel tell the exact status of the material in work. During the entire cycle the power and tuning automatically adjust to load conditions —the consistency of the glue, and the quantity of moisture in the wood.

The latest protective devices and controls are integrated into the generator. A circuit breaker with thermal overload as well as a magnetic trip for instantaneous protection against short circuit faults is included.

GREATEST
DOLLAR FOR DOLLAR
Power Tool Value
Shopmaster
20" Tilting Table
JIG SAW
$29.95
12" Drill Press
12" Tilting Table Band Saw
10" Tilting Arbor Saw
10" Swing Wood Turning Lathe
Belt and Disc Sander
Table Size Spindle-shaper
20" Table Size Saber Saw
8" Tilting Arbor Saw
Now . . . for the first time . . . you can get a 20" Tilting Table Jig Saw for the same price as 16" and 18" saws. A 20" working area on cuts to center of 40" . . . built with the same recognized high quality and rugged construction features of all other famous Shopmaster Power Tools.
FREE
complete catalog of famous quality Shopmaster Tools and Accessories.
Write Shopmaster, Dept. WD-1
1214 Third Street South
Minneapolis, Minnesota

AIR-CONTROL VALVE

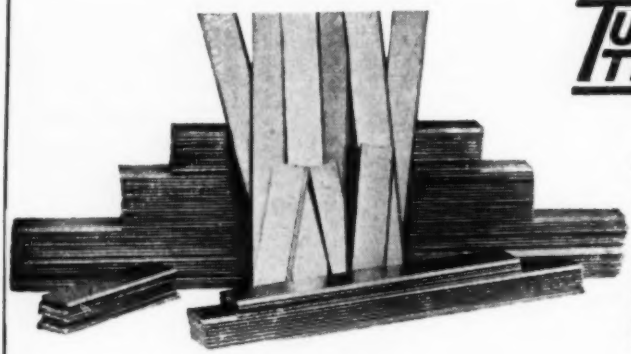
Announcement of a new automatic air-control valve, for use with air suction systems and dust collectors on units such as wood jointers, planers, sanders, table saws, and other similar equipment, is made by the Kindt-Collins Co., 12653 Elmwood Ave., Cleveland, Ohio.



Several exclusive and unusual features are claimed by the manufacturer for this new product to be known as the "Ventomatic Air Control Valve" (patent applied for). Extremely simple in design, this unit can be fitted to any machine, pipe or installation within its scope. The valve opens and closes automatically as the machine switch is turned on and off. This prevents the continual exhausting of warm air from the room when the machine is not operating, and effects important heating economies.

The operation of the valve is mechanically controlled by a solenoid, and is no way affected by the air stream. The new Ventomatic air control valve has been thoroughly tested and proved in actual performance tests over long periods of time. Sizes of valves are available to fit 3″, 4″, 5″, 6″, 7″ and 8″ ducts.

He who seeks revenge, digs two graves.



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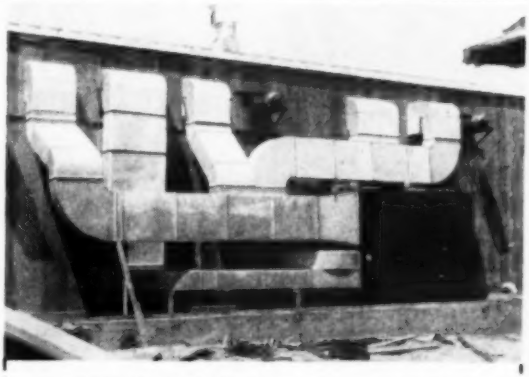

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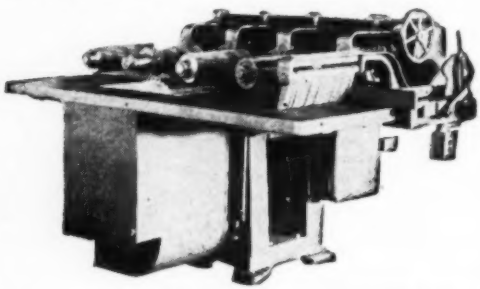

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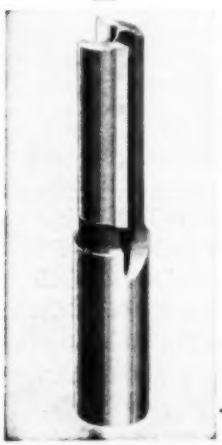

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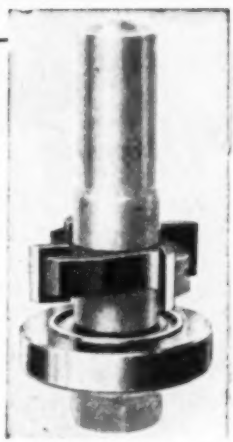

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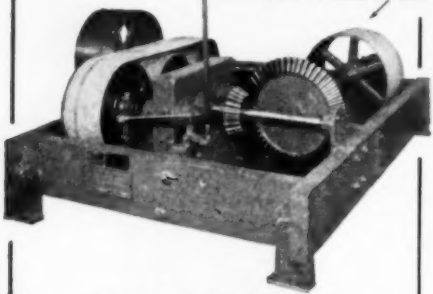

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Clippers, Sheridan 65" dmd
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Jointer, Amer. 12" bb. dmd.
Jointer, New Moak 12", bb. dmd.
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Mortiser, Sidney, single spindle pb. bd.
Mortiser, Greenlee No. 228 Vert. bd. & motor
Mortiser, W&M No. 288—5 spdle. Horiz. dmd.
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Black Bros. C-3 Resin 40 Gal. Mixer
New Union Conveyorized Edge Glue Spreader
44" New Black Bros. No. 22-D Double Rubber Roll Resin Glue Spreader
62" Black Dble. Rubber Roll Resin Glue Spredr.
54" Union Dble. Rubber Roll Resin Glue Spreader

GRINDERS

36" American No. 9 Knife Grinder
Capitol 125" Knife Grinder

HOT PLATE PRESSES

Bertheisen 100x50", Practically New
Plycor 80x60"
Plycor 100x50"
Plycor Continuous Feed Lumber Core Machine with Sizing Saw

JOINTERS

Diehl No. 660 Glue Jointer. Direct Motor Drive
Yates-American No. 213 Direct Motor Driven Glue Jointer

LATHES

Mattison 42" No. 57-D motor drive ball bearing
Mattison 30" No. 55-C motor drive ball bearing
Yates-American 30" T-5 Lathe

MORTISERS

Wysong & Miles No. 288 direct motor driven 6-spindle mortiser
Wysong & Miles No. 286 Hinge Seat Mortiser
New Northfield Single Chain Saw Mortiser

MOULDERS

Vonnegut 4" electric Moulder
Yates-American 4" Type C-88 Electric Moulder
Woods 6" No. 132M Electric Moulder
Newman 6" No. 46 Electric Moulder
Newman 12" No. 27 Ball Bearing Belt Driven
Practically new 12" Vonnegut Electric Moulder
Yates 4" C-3A Belt Drive Moulder with motor
Yates-American 10" C-89 Electric Moulder
Hayes Sash & Door Sticker w/Plowing & Boring

SINGLE PLANERS

Greenlee 36" No. 110, motor driven, ball bearing

DOUBLE PLANERS

Yates-American A-20 Electric Planer & Matcher with double profile
Yates-American 30" No. 177 ball bearing, direct motor driven with electric grinder
Whitney 30" and 36" No. 24 direct motor driven, ball bearing, with grinder and jointer

SANDERS

Mattison No. 124 Automatic Stroke Sander
Wysong & Miles 8' No. 294 Automatic Stroke Sander, Direct Motor Driven, Ball Bearing
Pearson Waterfall Sander
Oakley Semi-Automatic Stroke Sander
Oakley Model H drawer Sander
Nash No. 50 and No. 25 Turning Sander
McKnight Chair Back Post Hard Drum Sander

BAND SAWS

36" Yates-American Motor Driven Ball Bearing Band Saw

CUT-OFF SAWS

Mereen-Johnson No. 300 Double Cut-Off Saw
Wilkin-Challoner Chain Feed Double Cut-Off Saw and Panel Sizer
Yates-American No. 51 Direct Motor Driven Swing Saw
7 Beach Direct Motor Driven Ball Bear. Double Cut-Off Saws & Rip Saws for Sizing Ige. Panels

RIP SAWS

New Marion Glue Joint Rip Saw, in stock here
Mattison No. 207 Direct Motor Driven Ball Bearing Glue Joint Rip Saw
American No. 15 Ball Bearing Chain Feed Rip Saw
Yates-American G-67 Chain Feed Rip Saw

SHAPERS

Whitney No. 251 Double Spindle Electric Shaper
Whitney No. 234 Double Spindle Electric Shaper
Whitney No. 393 Automatic Single Spindle Shaper
Onsrud W-125 Double Spindle Automatic Shaper
Onsrud W125 Single Spindle Automatic Shaper

TENONERS

Jenkins No. 95 Electric, Double-End

VENEER MACHINERY

Francis 76" Hydraulic Veneer Clipper
Dennis Veneer Taping Machine, Motor Driven
100" Merritt Veneer Clipper
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88" Coe Clipper and Conveyors

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Williams Motor Driven No-Knife Hog
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WHEATON, ILLINOIS

WOOD WORKING DIGEST

JANUARY, 1953

READER'S SERVICE DIVISION

This insert (please note all four cards) is designed to help you obtain woodworking information. Any of these cards mailed to our Service Division will receive careful attention. There is also a form within the book for shop problems, used machinery, etc. Let us know when we may be of service to you. No obligation.

Please send information on PRODUCTS and SUPPLIES described on the following pages:

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Name..... Position.....

Company .....

Street .....

City..... Zone..... State.....

PRODUCT INFORMATION

A quick, free way to obtain information about the equipment and supplies you need to buy.

- ☐ Abrasives
- ☐ Adhesives, animal
- ☐ Adhesives, casein
- ☐ Adhesives, phenolic
- ☐ Adhesives, resin
- ☐ Adhesives, resorcinol
- ☐ Adhesives, urea
- ☐ Air Compressors
- ☐ Band Saw Tires
- ☐ Bits, auger
- ☐ Bits, dowel
- ☐ Bits, router
- ☐ Bleaches
- ☐ Bolts
- ☐ Boring Machines
- ☐ Car Pullers
- ☐ Chisels
- ☐ Clamp Carriers
- ☐ Clamps
- ☐ Conveyors
- ☐ Cutters
- ☐ Dimension Stock
- ☐ Dowels
- ☐ Drill Attachments
- ☐ Drill Presses
- ☐ Drills
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- ☐ Dryers
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- ☐ Finishes
- ☐ Glue Equipment
- ☐ Gluers, electric
- ☐ Grinders, knife
- ☐ Gum
- ☐ Gypsum
- ☐ High Frequency Heating Equipment
- ☐ Hogs
- ☐ Jointers
- ☐ Knives, moulder
- ☐ Knives, planer
- ☐ Knives, shaper
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- ☐ Loader Hoists
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- ☐ Machines, mortising
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- ☐ Sanders, center
- ☐ Sanders, disc
- ☐ Sanders, drum
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- ☐ Sanders, special
- ☐ Sanders, variety
- ☐ Sandpaper
- ☐ Saws, band resaw
- ☐ Saws, band
- ☐ Saws, chain
- ☐ Saws, cross-cut
- ☐ Saws, cut-off
- ☐ Saws, gang
- ☐ Saws, portable electric
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- ☐ Trucks, factory
- ☐ Unstackers, lumber
- ☐ Veneer
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WHEATON, ILLINOIS

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Andrews 6 spindles 8' Horiz. foot feed
Bell BBMD No. 24 Double End, boring & chucking & sawing 54" cap. Model 24A
Jones Superior radial 1" to 16"
Prybill—radial 1" to 16" Sgl. Spdl. Horiz.

DOVETAILERS

Dodds 10, 15, 20 spindle

DOWEL MACHINES

Hawker No. 2 All Ball bearing & roller bearing VBD

JOINTERS

American 12" Wedge Bed BB
American 16" Wedge Bed BB
12" Colloday, L. Powers, H. B. Smith, Crescent, Sidney
Porter 12" DMD
24" Porter DMD with knife grinder

LATHES

Mattison 55C BB Live Tailstock
Mattison 57D Ball Bearing

MORTISERS

Greenlee No. 227 Hollow Chisel DMD Motor Feed
Northfield chisel mortiser, motor driven
Wallace chisel mortiser, motor driven

MOULDERS

Mattison No. 224 9" all electric, hopper fd.
Mattison No. 262 6" Drop Bed DMD
Eaglesfield 6" DMD BB All Electric
Sherrill Timesaver 6" B.B. Belted Mtr. Dr.
Yates C4A 8 x 4 B.D.
Yates C55 9" DMD All Electric
Yates American, 18" DMD C55, BB
S.A. Woods No. 131 9", belt driven

PLANERS

Buss No. 4 BB 30" single Sec. Feed & Chip CMD Knife Grinder
Northfield 24" single, MD motor fd. No. 5
Whitney No. 32 36" BB CMD Knife Grinder
Whitney No. 29 40" CMD, BB

PLANER & MATCHER

Fay & Egan No. 156 20"x8" 6 hds., belt dr.

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Oakley hand block semi-automatic, mod. D
Peerless 9", 14" and 20" horizontal
Peerless 9", 14" Vertical
Solem No. 370 2 drum, 42"
Vonnegut vertical drum sander
Yates American hand block semi-auto.
Wysong & Miles edge sanders, osc. DMD
Wysong & Miles, Oakley, Mattison belt

SAWS - CUT OFF

Porter C43 5 HP DMD BB
Beach 5 HP DMD BD
Beach Roll Top MD Cap. 102x48
Heston & Anderson No. 5, No. 25 & No. 55
Multiplex 5 HP DMD BB
Unipoint 3 HP DMD BB
Wallace 2 HP DMD BB
DeWalt 1 to 5 HP DMD BB

SAWS - BANDSAWS

36" Towsley DMD
36" American, Tannewitz, Crescent, Oliver
27" Crescent Band Saw
32" Crescent guarded BB VBD
Northfield BB & DMD 20" to 36"

SAWS - RIP SAWS

Diehl BB MD MF No. 75 10 HP
Diehl No. 75 15 HP Motor DMD
Diehl BB No. 77 DMD HP
Hermance Straight Line Plain Bear., BD

SAWS - VARIETY

American Saw Mill 5 HP DMD Tilt Arbor
American No. 10 tilt top belt drive
Greenlee No. 495 DMD tilt arbor
BM Root tilt top belt drive
Northfield Tilt Top DMD
Towsley DMD Tilt Arbor 5 HP
Fay & Egan DMD Tilt Arbor 5 HP
American Sawmill Tilt Arbor DMD 5 HP
Tannewitz Type J tilt arbor
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ROUTERS

Onsrud No. 265 1½ HP
Porter No. 612 2 HP & 600

SHAPERS

McCartney BB 1 spindle
L. Powers single BB—MD
Oliver Mod. 287, sgl. spdl. B.D., BB, 5 HP
Union single spindle BB MMBD
Whitney single No. 182

TENONERS

American No. 1 single end belt driven
Fay & Egan single 5 heads CMD
Newman single end BD

MISCELLANEOUS

Electric Carpenter 5 mach. comb. BB, MD
Jenkins Veneer Jointer
Evans Ring Joint Machine
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Gard. Denver 5 HP Two Stage, Tank Mounted
Wayne 5 HP Two Stage, Tank Mounted
Chicago Pneu. 9x8 Horiz. 173 CFM, tank, M.D.

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Yates-Amer. Single Spindle, B.B., D.M.D.
Newton 2 Spindle 1⅛"-7¼" Cap., M.D.
Moak 2 Spindle, 1"-10" Cap. M.D.
Valley City 2 Spindle, 1"-18" Cap. M.D.

BORERS—VERTICAL
Wysong & Miles No. 282 Sgle. Sp. B.B., M.D.
Andrews 4' Cap. 4 Spindle, Power Feed, M.D.

BOX EQUIPMENT
Saranac Single Head Stapler, M.D.
Morgan 6 track Nailer, C.B. M.D.
Morgan 7 track Nailer, C.B. M.D.
Morgan 16 track-36" Nailer, O.B. Clinch, M.D.
Morgan 18 track Nailer, Lidder style, Comp. chucks, Roller table M.D.
Fischer Box Board Matcher, M.D.

CLAMP CARRIERS
Taylor 8 sec.-7' 6" Cap. Hand Operated
Taylor 12 Sec.-12' Cap. Style 80 Hand Oper.
Billstrom 39 Sec.-6' 6" Cap. Power Driven
Taylor 40 Sec.-7' 6" Cap. Hand Operated
Taylor 40 Sec.-8' 6" Cap. Style 80, Air Drive

DOWEL EQUIPMENT
Hawker Dowel Machine, B.B. M.D.
Bell No. 8 Gluer & Dowel Driver, M.D.
Jenkins No. 126 Borer, Gluer & Dowel Driver, M.D.

FACERS
Porter 24" B.B. Facer, with Herzog four post feeder, M.D.
Herzog (Jack-Church) 16" Swing Out Feeder, M.D.

FREQUENCY CHANGERS
10 KVA West. Electric, 220 Volt, 120 Cycle
15 KW Gen. Electric, 220 Volt, 120 cycle

JOINTERS
Union 6", B.B., D.M.D.
Towsley 10", B.B., D.M.D.
Moak 16", B.B., D.M.D.
American 20", B.B., M.D.
Fay & Egan 24", B.B., M.D.
American 24", B.B., M.D.
Jenkins No. 343A Glue Jointer, B.B., D.M.D.

MORTISERS
Sidney No. 702 Hollow Chisel B.B., D.M.D.
W & M No. 284 Hollow Chisel, B.B., D.M.D.
Greenlee No. 227 BM, Holl. Chisel, B.B., D.M.D.
Fay & Egan No. 379, Hollow Chisel, M.D.
Loeffler No. 609 Osc. Spindle, B.B., M.D.
New Britain No. 2 Chain, M.D.

PLANERS
F & E 24" Single, Screw Bed, M.D.
Smith 30" Single, Cabt. Style, B.B., M.D.
Yates No. 156-36" Single, Cabt. Style, B.B., D.M.D.
Whitney 36" Single, Cabt. Style, B.B., D.M.D.
Whitney 40" Single, Cabt. Style, B.B., D.M.D.
Whitney 30" Double, Cabt. Style, M.D.
Whitney No. 24-30" Double, Cabt. St., B.B., D.M.D.

ROUTERS
Onsrud No. 265, 1½ HP, Motorized
Onsrud No. 240 D, 5 HP, Motorized
Ekstrom-Carlson No. 327, 5 HP, Motorized

SANDERS—BELT & EDGE BELT
Porter-Cable 6" Vert. Belt, B.B., M.D.
Porter-Cable 10" Vert. Belt, B.B., D.M.D.
Peerless 14" Vert Belt, M.D.
Fay & Egan 16" Hor. Belt, M.D.
W & M No. 274 Edge Belt & Scroll, M.D.
Mattison No. 172 Osc. Edge Belt, M.D.

SANDERS—DRUM
Smith 42"-3 Drum End. Bed, B.B., D.M.D.
Solem S3M 42"-3 Drum, End. Bed, B.B., D.M.D.
American No. 9-61"-3 Drum, Roll Feed, D.M.D.

SANDERS—HAND BLOCK & STROKE
Jefferson No. 206-8" Hand Block, B.B., M.D.
Mattison No. 138-B-8" Hand Block, B.B., M.D.
Yates No. 430-8" Hand Block, M.D.
Curtis 6'-6" Hand Block, M.D.
Curtis 6'-6" Belt Semi-Auto. Stroke, B.B., M.D.
Mattison No. 124 6'-6" Belt Auto. Stroke, M.D.

SANDERS—MISCELLANEOUS
Ecco No. 18 Double End, Spindle, B.B., D.M.D.
McKnight Osc. 2 Spindle, M.D.
Jones Sup. 48" Double Disc, M.D.
Ecco No. 23 Scroll, B.D., M.D.
Nash No. 10-6 Spindle, Auto Turning, M.D.

SAWS—BAND
Moak 36", M.D.
American 36", M.D.
Superior, 36", M.D.
Crescent 36", B.B., M.D.
Moak 36", B.B., M.D.
Chicago 42", B.B., M.D.

SAWS—CHAIN FEED & SPUR FEED
Diehl No. 75 Chain Feed, B.B., D.M.D.
Mattison No. 207 Chain Feed, B.B., D.M.D.
Hermance No. 36 Chain Feed, M.D.
American No. 1 Spur Feed, B.B., M.D.
Greenlee No. 426 Spur Feed, M.D.

SAWS—CUT-OFF
Wallace Rad. Cutoff, B.B., D.M.D.
Mattison No. 244, B.B., D.M.D.
Porter C43, B.B., D.M.D., Air Drive
Porter A43, B.B., D.M.D., Air Drive
Chicago Swing Cutoff, M.D.
Bell No. 16 Swing Cutoff, B.B., M.D.
Bell No. 12 Double Mitre, M.D.
Bell No. 12C Double Mitre, B.B., D.M.D.
Nash No. 4 Dble. Cutoff & Chuck, B.B., D.M.D.
Buss Double Cutoff, M.D.

RESAWS
American No. 110-54" B.B., D.M.D.
Yates V5-64" B.B., M.D.

SAWS—VARIETY
Gardner Sliding Table, B.B., D.M.D.
Oliver No. 232 Tilt. Arbor, B.B., D.M.D.
Wallace No. 11 Tilt Arbor, B.B., D.M.D.
Moak No 16 Tilt Table, B.B., D.M.D.
American No. 1 Tilt Table, B.B., M.D.
F & E No. 470 Jig Saw, D.M.D.

SHAPERS—SINGLE SPINDLE
Orton, Tilting Spindle, B.B., M.D.
Crescent No. 85, B.B., M.D.

SHAPERS—DOUBLE SPINDLE
Buss No. 8-B.B., M.D.
Jenkins, B.B., M.D.
Sidney, B.B., M.D.
Onsrud W226 Buck Shaper, B.B., D.M.D.
Porter Buck Shaper, B.B., M.D.

TENONERS—SINGLE END
B & M-Tenon Heads & Lower Cope, M.D.
Hayes-Tenon Heads, U & L Copes, Cutoff, M.D.
Hermance-Tenon Hds., U&L Cones, Cutoff, MD

TENONERS—DOUBLE END
Fay & Egan No. 401B-Crate Style, M.D.
Jenkins No. 95-All Electric, Jump Dado

MISCELLANEOUS EQUIPMENT
Porter Single Spindle Carver, B.B., M.D.
Handy No. 50 Drawer Clamp-48" Capacity
Dodds 15 Spindle Dovetailer, M.D.
Amer. No. 34C-12"x6" Four Side Moulder, M.D.
Amer. No. 11 Auto. Thin Knife Grinder, M.D.
Pringle & Brodie 8" Ring Mach., B.B., M.D.
Acme Silver Stitcher, M.D.
Sturtevant No. 30-30" Single Blower, B.B., M.D.
Sturtevant No. 54 Double Blower, B.B., M.D.

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Yates No. 312 44" chain-feed, hand rip.
McDonough 62" and 44" vertical band resaw.
Marshon 42" Twin Band Rip, B.B.

BORING MACHINES
Delta 17" Drill Press ¾ HP motor
Greenlee No. 371—6" Vert. Gang B.B., D.M.D.
New Wysong & Miles sgl. spdl. Vert. D.M.D.
Greenlee No. 363-6 spindle, Univ. Vert., M.D.

BLOWERS & FANS
American size 40 Type E "TWIN" & motor.
American No. 80E with 40 h.p. coupled motor.
Clarage type CI suction fan ½ HP motor

CLAMPS—GLUE ROOM EQUIPMENT
Greenlee No. 500 frame and furniture clamp.
Taylor 6-ft. 12-sec. wheel type clamp carrier.

FILING ROOM MACHINERY
Hanchett No. 608 lap gr. b.b. max. cap. 8" wide.
Black Diamond No. 5 circular saw filer, m.d.
Wardwell Y-18 Cir. Saw filer, M.D.

JOINTERS
Yates No. 213 Continuous feed direct M.D.
American No. 1, 24-in. ball-brg. motor drive.
Yates No. 199, 20-in. rd.hd. V-belt m.d.
Porter No. 300 16" Ball Brg. Motor Drive.

LATHES
Oliver 12"x5' Bed. Hand Carriage
Imperial automatic shaping lathe, b.b. m-d.
Porter 16"x10' Bed with motor.

MORTISERS
New Britain No. 2 Chain, with motor.
Greenlee No. 227 BM hollow-chisel, DMD
American No. 20 hollow-chisel motor-drive.

MOULDERS
Woods 10" five-head, all electric
Mattison No. 226—12"x6", all electric
Yates No. 108, 10" belt dr. coupled motor
Woods No. 132-M 6" Electric.
Y-A No. C-99, 12" BB-DMD
Yates No. C-3 4" fast feed, with motor.
Vonnegut 6" B.B.-D.M.D.

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Auto Nailer "Blue Model" M.D.

PLANERS
Greenlee No. 120-30" Dou. B.B.-D.M.D.
Newman No. 600 24" Sgl. direct motor Dr.
Yates B-2, 36-in. double, motor-drive.
Yates No. 156 20" rd. hd., M.D.
Buss 6A 36" 6-roll single dir. M.D.
Yates No. 177, 30 x 12" double motor drive
American No. 80 15" double, heavy duty
Whitney No. 37-32" Single Ball Brg. M.D.

ROUTERS
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Ekstrom-Carlson No. 126, ball brg., motor drive

SHAPERS
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Whitney No. 134 double spindle dir. M.D.
Onsrud W 125B Automatic, 72" table
Whitney No. 165 S.S. motor on arbor.
Onsrud, W-248 single spdle., high speed
Whitney No. 282 sgl. D.M.D. 56" x 40" table.

SANDERS
Porter-Cable Oscil. spdl. M.D.
Yates-American 842-30" 2 dr. End. Bed. M.D.
Yates No. 421, 49", 6-drum with motors
Solem No. 370, 43" 2-drum End. Bed.
Fay & Egan 30" 3-drum roll feed
Mattison No. 124, 6-ft. auto. stroke, M.D.
Yates-American No. 7, disc and spindle.
Yates No. 431, 43-in., 3-drum end. bed, M.D.

MITRE SAWS
Tannewitz J-250 Tilting Arbor, direct M.D.
American Dbl. revolving arbor, 5 hp belted mtr.
Whitney No. 77 tilting arbor, direct M.D.

CUT-OFF SAWS
Oliver No. 94-D Straight Line, mtr. on arbor
American No. 51 swing saw, motor-drive.
Greenlee No. 451 auto. cut-off and dado
Buss double cabinet type, motor drive
Porter 43-20S 36" stroke, motor on arbor
Irvington "Model" Swing—1 HP Motor

RIP SAWS
G-16 Power Feed, BB, MD
Sinker-Davis No. 13 power gang, 25-h.p. motor.
Greenlee No. 426 Roll Feed with motor

TENONERS
W-C No. 70 jump dado B.B.-D.M.D.
Greenlee 530 Single, Ball brg. with motor
American single-end with copes, rolling table
Jenkins No. 95 double end, jump dado, D.M.D.

This is only a partial list—send or call your inquiries

1965 E. Milwaukee — Detroit 11, Michigan

Telephone TRinity 2-6442

New OR Rebuilt TO NEW STANDARDS

MOTORIZED OR BELT DRIVE MACHINES

BAND SAWS
20"—27"—30"—32"—36"

BORERS
Single spindle, horizontal & vertical
2 spindle vertical, foot feed
4 spindle vertical—boring area 40"x12"
Andrews Mult. Vert. power feed, boring area 30"x24". Number of heads to suit job
Miscellaneous Borers for various jobs

JOINTERS
8"—12"—16"—20"—24"—30"
30" Jointer & Feeder, B.B., D.M.D.

MOLDERS
Greenlee 8" 4-side B.D.
Woods 9" 4-side B.D.
X-L Moldmatchers, 4" & 6" Electric

MORTISERS
Greenlee No. 228 Vertical, motor
Greenlee horizontal, foot feed
Northfield, vertical, foot feed

PLANERS
Single—12"—16"—20"—26"—30"—42"
American No. 145, 30"x8" Dbl. sect. roll & C.B.
Yates B-2, 30"x8" Dble. sect. roll & C.B. D.M.D.

MUST MOVE QUICKLY
1951 MODELS

The latest improved machines, all direct motor driven, have had only about sixty days' usage. They must be moved quickly owing to customer liquidating the business. The machines are mentioned briefly — write for details.

BUSS TYPE L 30" SINGLE SURFACER
MATTISON No. 202 STRAIGHT LINE RIP SAW
CARTER GUIDE LIGHT
HENRY 48" RADIAL ARM SAW
NORTHFIELD 16" JOINTER
DELTA 12" TILTING ARBOR SAW
EKSTROM CARLSON NO. 111 EDGE BELT SANDER
AMERICAN 30" JOINTER AND FEEDER

Our stock of about 150 machines of various types and makes enables us to fill your requirements for either belt or motor driven machines, new or rebuilt to new standards. We are briefly listing just a few from our large stock.

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Amer. 42" & 30" 3-drum, roll feed, M.D.
F & E 24" 2-drum, roll feed, M.D.
Oliver No. D-183, belt, M.D.
Hand Block belt—various types

SAWS, VARIETY
Tilting arbors, 5 & 7½ h.p.
Tilting Table, w & w/o Borer
Saw & Dado, foot treadle
Radial Arm, 2—3—5 H.P.
Henry 48" wide Radial Arm, 5 h.p.
Double End, 6' 6", with double end arbors

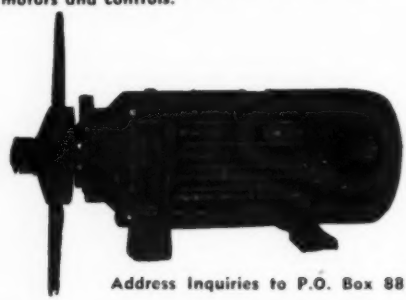
RIP SAWS
Sinker Davis, self-feed
Mattison No. 202 St. Edge D.M.D. prac. new
Several Hand Feed Saws

SHAPERS
Northfield, single Hi-speed D.M.D.
Amer. Sgle. Spindle, heavy duty
Double Spindle—various makes

TENONERS
Single End—Copes & Cut-off

SAW ARBOR MOTORS

Totally enclosed, dust proof, fan cooled, ball bearing motors, 3600 R.P.M. From 1 h.p. to 15 h.p. Measures only 3¼" from center of motor shaft to flatted top, facilitating the use of the smallest possible diameter saw blade. 1-2-3-5 horse power motors in stock. A large stock of Standard Frame 3 phase motors and controls.



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Indiana 15-H two-spindle horiz. radial borer.
Greenlee No. 368-30" Mult. Horiz. Borer.
Andrew 48" & 72" Mult. Horiz. Borer.
* Wysong & Miles No. 283-B Vert. Sgl. Spl. Borer.
* Greenlee No. 386 4-ft. Vert. Multiple Borer.

CHAIR MACHINERY
* Bell No. 100 front and back post borer.
* McKnight 4CM horiz. and vert. borer.
* McKnight double end sawing and boring machine.
McKnight No. 1E saddle seat machine.
Bell No. 8 dowel gluer and driver.
Dauber-Bell dowel cutter and pointer.
McKnight chair benders, complete.

CLAMPING MACHINERY
Taylor-Billstorm-Black 12-30-40 and 60-sec. carrier
Handy and Union revolving case clamps.

GLUE MIXERS & SPREADERS
Union 36" and 60" Dbl. Roll Resin Glue Spreaders.
Francis 12-in. and 18-in. edge glue spreaders.

JOINTERS
* Northfield 12" hand jointer.
* Fay & Egan No. 506—12" hand jointer.
* Yates-American No. 213 glue jointer.
* Jenkins No. 343-A glue jointer.
* Diehl No. 60 glue jointer.

LATHES
* Mattison No. 55C and F Auto. Turning Lathes, b.b.
* Yates-American T-5 auto. turning lathe.

MORTISERS
* Greenlee No. 227 automatic hollow chisel mortiser.
New Britain Nos. 2 and 7 chain saw mortiser.
* Whitney No. 67 horiz. osc. bit mortiser.

MOULDERS
* Oliver No. 202—4-in. electric moulder.
* Yates-American C-88 6" electric moulder.
* Mattison No. 276—6-in. electric moulder.
* Vonnegut 6-in. electric moulder.
* Yates No. 108—10 in. heavy-duty moulder.
* Yates-American C-99 12-in. electric moulder.
Yates C3A-4" belt drive moulder.

PLANERS—Facing
* Whitney No. 32—30-in. single planer.
* Porter 24-in. facing planer—Herzog feed.

PLANERS and MATCHERS
* Stetson Ross 6-10-A 15-in. electric matcher.

PLANERS
* Crescent P-24—24-in. single planer.
* Whitney 105 24" single planer.
* Buss 4-A 30-in. single planer.
* Whitney No. 29—36-in. single planer.
* Whitney No. 24—30-in. and 36-in. double planer.
* Whitney No. 33 32-in. heavy duty double planer.
* Greenlee No. 120 30" double planer.

ROUTERS
* Onsrud W-240 heavy duty electric router.
* Porter No. 600 and 610 heavy duty elec. routers.

DRUM SANDERS
* Smith No. 404B—42" & 49" 3-drum endless bed sanders.
Yates No. 431—48-in. 3-Dr. end. bed mtrzd.
* Solem S 3-M 73-in. 3-drum endless bed sander.
American No. 9—61-in. 3-drum roll feed, mtrzd.

SANDERS—Belt & Miscellaneous
* Wysong & Miles No. 294 auto. stroke sander.
Mattison No. 124 auto. stroke sander.
* Wysong & Miles No. 277 hand block belt sander.
Nash No. 10 & No. 25 auto. spindle sanders.

SAWS—Band Scroll & Resaws
* Tannewitz Type G. 36-in. band scroll saw.
* Fay & Egan No. 50—36-in. band saw.
* McDonough 44-in. vertical band resaw.

SAWS—Cut-Off
* Porter 43-208 straight-line cut-off saw
* Yates-American G-44 straight line cut-off saw
* Monarch 36AF radial arm saw.
* Jenkins No. 105-A dbl. cut-off and mitre.
* Bell 12B double cut-off and miter saw.

SAWS—Rip
* Diehl No. 75 straight line ripsaw.
* Mattison 202 & 207 straight line ripsaws.
* Yates-American G-77 straight line ripsaw.
* Yates-American G-50 heavy duty ripsaw.
Greenlee No. 426 self feed ripsaw.

SASH & DOOR MACHINES
* Bell No. 11 power door clamp.
Bell No. 7 dowel driver and gluer.

VARIETY SAWS
* Eaglesfield tilting arbor variety saw.
* Fay & Egan No. 500 tilt-table variety saw.
* Baker double arbor variety saw, b.b.

SHAPERS
* NEW Crescent No. S-2 single spindle shaper.
* Moak No. 7 single spindle shaper, b-m-d.
* Porter No. 103 single spindle shaper.
* Porter No. 201 double spindle shaper.
* Whitney No. 8 double spindle shaper, b-m-d.
* Greenlee No. 180 double spindle shaper.
* Whitney No. 351 double spindle, 12½ HP motors
* Whitney No. 295 automatic, double spindle shaper
* Onsrud No. 124 automatic single spindle shaper.
* Onsrud WB-85 auto. dbl. spdle. shaper

TENONERS
* Greenlee No. 530 and 534 single end tenoners, b.b.
* Wilkin-Challoner No. 70 - 96-in. dble. end tenoner
* Jenkins No. 95—96-in. double end tenoner.
Jenkins No. 96 60-in. double end tenoner, b.b.
* Greenlee No. 545—90 inch double end tenoner.

VENEER EQUIPMENT
* Diehl Nos. 89 and 890 tapeless veneer splicers
Dennis No. 2 & No. 4 veneer tapers
Berthelsen 50"x100" two-opening hot plate press.
Francis 36"x84" hyd. veneer presses.
Merritt 84x54—8—10—12 plate redriers.
Jackson 66"x42" veneer lathe.

MISCELLANEOUS MACHINES
Saranac No. 1RA corrugated fastener driver
* Hanchett GK 36-in. auto. knife grinder.
Food Machinery Co. Model AC-2 boxmaker.
* Woods No. 227 side head grinder.
NEW Hanchett No. 133 auto. band resaw sharpener

This is only a partial list. If the machine you want is not shown, write us.

*** Indicates Ball-Bearing and Motor Driven**

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The Board of Directors of the Menasha Wooden Ware Corporation has authorized sale of all woodworking machinery and equipment in plant at Rockford, Illinois. Many of these units are less than six years old — some are like new.

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Greenlee No. 368 Horiz. 30" BB, MD
Wysong & Miles No. 283-B Single Spdl., MD
Bell No. 24 Sawing, Boring, Chucking

CLAMPS
Bell Sauce "E" Air Clamps (3)
Handy Revolving Case Clamps (2)
Billstrom 39 sec. 8' 6" Carriers

JOINTER-FACER
Fay & Egan No. 316—30" Jointer BB, MD Billstrom Feeder BD

MORTISERS
Greenlee No. 227 BB, MD

MOULDERS
Mattison No. 229-8" Electric, lag bed fd., 25 KVA Freq. Changer
Yates No. C-4-A-8", 20 hp motor

PLANERS
Whitney No. 32-30" Single BB, MD

ROUTERS—SHAPER
Ekstrom, Carlson Combination 2 hp Disc Drive

SANDERS—DRUM
Yates-American No. 433-49" 3-Drum BB, MD

CUT-OFF SAWS
Porter 43 SL Air Operated (3)

SHAPERS
Buss Double Spindle MD
Whitney No. 395 Double Automatic

TENONERS
Wilkin Challoner 96x72 D. E. Tenoner

MISCELLANEOUS
Pico Electronic Edge Gluer
Lancaster No. 600-B Drawer Sander
McKnight No. I-E Saddle Seat Machine
Mitts & Merrill Hog, 6000 lb. cap. roller bearing, 75 hp motor
Root Lumber Lifts, 8'x18' plate
Roller conveyor 28"—8" centers
Richards-Wilcox No. 75 track
Yates M7 Side Head Grinder
Sturtevant No. 80 Exhaust Fan, 100 hp 870 mtr.
Bell No. 8 Dowel Driver
Lathe head equipment

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Colladay 36" Motor Driven
Crescent 38", cast iron wheels
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Root "GM" Vertical Single Sp.
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Keystone 3-Sp. Horiz. 1" centers
CARVERS
Porter Ball Bearing Spindle
Gallmeyer & Livingston Single Sp.
Minnesota No. 308E 16-Sp. Multiple
CLAMP CARRIERS
Taylor 7½' 30-Sec. Chain Type
Taylor 7½' 40-Sec. Chain Type
CLAMPS
Handy Case & End Clamps
Handy No. 444 Two-Way Air Clamp
DOVETAILER
Dodds 12-Spindle, spiral gear
FREQUENCY CHANGERS
G.E. 10 KW 60/120 cycles
G.E. 50 KW for 60/100 cycles
GLUING MACHINES
Bell 72" Plate Edge Gluer
Black 5-Gal. Portable Resin Mixer
Black 30-Gal. Cold Resin Mixer
JOINTERS
Y-A No. 1, 12" Ball Bearing, M.D.
30" with Billstrom Feed Attachment
Diehl No. 60 Continuous Feed Glue Jointer
Jenkins No. 3CD Cont. Feed Glue Jointer
LATHES
Imperial Auto. Turning, D.M.D.
Mattison No. 55C Ball Bearing Auto. Turning
MORTISERS
Wysong & Miles No. 284, P.F., Hollow Chisel
Fay & Egan No. 462 P.F. Hollow Chisel
MOULDERS
Hermance No. 50—8" Ball Bearing
Mattison No. 226, 12" Electric
Smithway "XL" 4" Ball Bearing, M.D.
PLANERS
Yates No. 152, 24" Single, M.D.
Buss 30" & 36" Single, M.D.
Whitney 30" Dbl., 8 feed rolls
SANDERS
Salem No. 370A 49" 2-Dr. Endless Bed
Fay & Egan 48" 3-Dr. Endless Bed
Mattison No. 137 Hand Block Belt Sander
Pearson Model A Moulding Sander
Curtis No. 11 Semi-Auto. Belt Sander
SAWS—CHAIN FEED
Diehl No. 55 M.D. Chain Feed Rip
SAWS - CUT-OFF
Porter Floor Type, with Table
Y-A C-44 Floor Type, with Table
Bell No. 12 Double Miter
Root & Beach Double Cut-Off
SAW TABLES
Tannewitz SJ Tilting Arbor
American Dbl. Revol. Arbor
Oliver No. 232-D Tilting Arbor, Ball Brg.
SHAPERS
Porter No. 200 SVM Single, M.D.
Whitney No. 165 D.M.D. Single
Whitney No. 134 Double Ball Bearing
TENONERS
Colladay-Power-Fay Egan, Single End.
VENEER MACHINERY
Berthelsen 50x100" Single Open Press
Capital 150" Veneer Clipper
Jenkins No. 23 DMD, Ball Brg. Jointer
MISCELLANEOUS
Woods Lock Corner Box Machine

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LOCAL FURNITURE MFG. PLANT

6" Vonnegut Electric Moulder, Hopperfeed
Yates-American T5-30" Auto. Lathe w/Hds.
2—Yates-American G67 Chain Feed Rip Saws
Yates-American U-900 Router, 1½ HP Mtr.
Whitney No. 134 DBL Spindle Shaper with Frequency Changer
Yates No. 213 Glue Jointer
Tannewitz Variety Saw, Tilt Tbl., 5 HP Mtr.
Foley Saw Filer
DeWalt 5 HP Radial Saw
Dodds 12 Spindle Dovetailer
Wilkins-Challoner DBL End Tenoner, 60" x72" Capacity, 15 HP Motor
Fay & Egan 4 Spindle Vertical Borer
H&A No. 5—Swing Saw
Paasche 8x8x6 ft. Spray Booths
Yates-American C4A-4"—4 Side Moulder
Diehl No. 55 Chain Feed Rip Saw
XL Roll Feed Rip Saw
Mershon 54" Band R.S. Saw, 35 HP Motor
Morgan 8 Track Open Back Nailer with Cleater
Oliver No. 173E Scroll Saw, 1½ HP Mtr.
Yates No. S4-8" Edge Belt Sander
2 HP Brush Sander, Vonnegut
Whitney Model No. 67 Oscillating Router, M.D.
Handy No. 71 Revolving Case Clamp
Taylor 16 Section 8' Wheel Type Clamp Carrier
Berlin No. 185-30"x8" Dbl. Surfacer
Berlin 49"-3 Drum Endless Bed Sander
McKnight Saddle Seat Machine
Francis 24"x96" Veneer Press, 15 Screws

A Number Of Other Machines. Send Your Inquiry For Equipment Not Listed.

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Hayes 102"x60" Double End Tenoner
Crescent Ball Bearing Electric Single End Tenoner
Hermance Belt Drive Single End Tenoner
American No. 1 Single End Tenoner
Mattison No. 55-C—30" Ball Bearing Auto- matic Shaping Lathe
Mattison No. 57-D-42" Ball Bearing, Auto- matic Shaping Lathe
American No. 35-7" Ball Bearing Electric Moulder
American No. 35—8" Ball Bearing Electric Moulder
Yates-American No. C-55—12" Ball Bear- ing Electric Moulder
Hermance No. 50—8" Ball Bear. Moulder
Vonnegut 6" Ball Bearing Electric Moulder
Jones-Superior No. 35 Two Spindle Horizon- tal Borer
Pringle & Brodie Single Spindle Borer
Wysong & Miles No. 283-B Single Spindle Borer
Salem S3-M—49" BB Three Drum Endless Bed Sander
Wm. Loeffler 24" Drum Sander
Jones-Superior No. 145—30" Disc Sander
Porter Straight Line Cut-Off Saw
Buss Double Cut-Off Saw
Tannewitz 42" Ball Bearing Band Saw
Buss 36" Ball Bearing Double Planer
Whitney No. 24—30" BB Double Head Cabinet Planer
Whitney No. 39-A DMD BB Double Spindle Shaper
Advance Double Spindle Shaper
Buss No. 8 BB Double Spindle Shaper
Mattison No. 244 BB Cut-Off Saw
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THE OSBORNE & SEXTON MACHINERY COMPANY

P.O. BOX 88, COLUMBUS 16, OHIO

HARDWOOD INSPECTION SCHOOL

Since the John W. McClure School of the National Hardwood Lumber Association started in February, 1948, nine classes have graduated and both sponsors and students, in every instance, have been most enthusiastic about the benefits of this training course. There is a class in progress at the present time and registration for the next term is officially open.

The next term will begin February 15, 1953. Applications are available from the Chicago office at 59 E. Van Buren.

The course, held at Memphis, Tennessee, provides for five months of intensive study in the classroom, lumber shed and yards. Here students learn to identify the various species of hardwoods and apply the rules by actually grading and tallying the lumber. They are also given the opportunity to acquire a first-hand knowledge of the hardwood industry in the production, distribution and fabrication branches.

FOR SALE

1 Auto Nailer A. C. Motor

JAMES H. JONES COMPANY

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STATE 2-1670

COMBINATION GRINDER

Samuel C. Rogers & Company, 185 Dutton Ave., Buffalo 11, N.Y., recently announced the introduction of a new double purpose, combination grinding machine. It is known as the Rogers Type EE. This new type bench grinder handles machine knives up to 22" in length and has attachments to handle gumming of circular saws up to 20" in diameter.

SCOTCH PRICES

(Denotes Better Buys)

Bandsaw, with resaw attach., F. & E. No. 146, 42", 20 h.p. ballb. mtr.
Bandsaw, ballb., Sidney 36", 5 h.p.
Belt Sander, ballb., Beach No. 201, 2 h.p.
Blowers and Cyclones, various sizes.
Borer, horiz., 2-spdl., Oliver, ballb., mtr.
Boxboard Printer, 2-color, Morgan 24"x44".
Boxboard Matcher, 12-roll, Morgan, mtr.
Circular resaw, Am. 30", 15 h.p.
Clamp, Door, Am. 4'x8'.
Clamp, Sash, Smith 4'x5'.
Clamps: Handy No. 195, mitre; Handy No. 50, drawer.
Corrugated Fastener Driver, Doig "Little Dandy", mtr.
Dowel Machine, Bell b.b., 2 mtrs., Jenkins fast-fd., mtrs.
Dust Collector, Dustkop, 3 h.p.
Edger, dbl., chain-fd., to trim panels up to 4' wide.
Jointer, 12", Sidney, b.b., 3 h.p. mtr. on cyl.
Jointer, incline bed, ballb., Newman 16", 5 h.p.
Kiln Trucks, 5' and 6', roller bearing.
Lock Corner Cutter, dbl.-end, B. & M., automatic.
Mortiser, W. & M., No. 284, ballb., mtrs.
Moulder, ballb., elec., 12" Eaglesfield.
Moulder, ballb., Smith 6", 4-s., mtr.
Nailers, Morgan & Doig 4 to 28-track, open and closed back, with and without clinching attachm.
Planer, dbl., Woods No. 450, 24", 6-kn. rd hds.
Planer, dbl., Am. No. 666, ballb., 30", mtrs.
Planer, dbl., Whitney No. 24, ballb., 30" mtrs.
Planer, sgl., Whitney 30", ballb., 10 h.p.
Planer, single, Yates-Am., B-7, 4-kn. rd. hd. 20 h.p., 3600 rpm cyl. mtr., 7½ h.p. fd. mtr., will feed 110' per minute.
Planer & Matcher, 4-s. F. & E. No. 40, 24"x6".
Ripsaw, self-fd., F. & E. No. 504, ballb. mtr. on arbor.
Router, E-C, 2 h.p., 20,000 rpm.
Router, E-C, No. 327, 3 h.p.
Sander, 3-dr. roll-fd., Berlin 30", 4 mtrs.
Sander, 3-dr., e.b., Yates No. 431, 31", 4 mtrs.
Sander, 2-dr., F. & E., No. 221, 24".
Sander, auto. stroke, 8', Mattison No. 124, 5 h.p.
Sander, edge belt, W.&M. No. 312, 5 h.p.
Sander, Dowel, Nash No. 4.
Sander, Vonnegut, brush, 1 h.p.
Saw, dbl.-end, Bell mitre 72".
Shaper, 2-spdl., Whitney No. 134, freq. changer.
Stapler, 4-hd., Saranac 60", open-back.
Sticker, 4-s., American 4", 10 h.p.
Surfacer, e.b., dbl., Egan 26"x12", 20 h.p.
Tenoner, dbl.-end, Greenlee No. 545, elec.
Tenoner, sgl.-end, Greenlee No. 532-A, 4 mtrs., used one week.
Veneer Presses, Towsley 24" and 38", 3-screw.
Veneer Press, elec., Black 36"x84".
Veneer or edge jointer, 8' 6" capacity.
Veneer Press, hot plate, 8' 6" x 4" wide.

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Jenkins No. 3CD Direct Motor Driven Ball Bearing Cont. Feed Glue Jointer
M No 55-F 30" Motor Driven Ball Bearing Auto. Turning & Shaping Lathe
Pringle & Brodie 2" & 3" B.B. Var. Lathes
Greenlee No. 228 Motor Driven Vertical Automatic Hollow Chisel Mortiser
Ekstrom Carlson No. 105 Ball Brg., Mtr. Dr. Spindle Carver
Superior No. 145—30" Motor Driven Disc Sander, tilting table
Peer'ess No. 9 - 14" Vertical Belt Sander, vee belt motor drive
So'em No. 370A - 31" Motor Driven Ball Bearing Two Drum Endless Bed Sander
Solem S-3-M 49" Direct Motor Driven Ball Bearing Three Drum Endless Bed Sander
Loeffler 24" Mtr. Driven Open Drum Sander
Vonnegut 6" Electric Four Head Moulder, hopper feed, rd. hds., jointers
American No. 35—9" Electric Ball Bearing Moulder, sq. hds.
Yates C55—12"x4" Electric Ball Bearing Mou'der, rd. hds.
Pringle & Brodie 6" & 8" B.B. Ring Machs.
Ekstrom, Carlson No. 327 H. S. Elec. Router
Hermance No. 300-G Direct Motor Driven Ball Bearing Gang Ripsaw
Mattison No. 244 Direct Motor Driven Straight Line Cut Off Saw
Tannewitz 42" D.M.D., B.B. Band Saw
Greenlee No. 495 Direct Motor Driven Tilt-ing Arbor Variety Saw
Beach No. 3 Motor Driven Ball Bearing Double Cut Off Saw
Yates-American No. 1 Motor Driven Ball Bearing Variety Saw
Greenlee No. 356 Direct Motor Driven Vert. Single Spindle Borer
Greenlee No. 363 Direct Motor Driven Univ. Spindle Gang Borer
Yates-American U40 Direct Motor Driven 6-ft Vert. Gang Borer, 8 univ. spindles
Dodds 15-Spindle Dovetailer, Spiral Gears, attached motor drive
Bell No. 24B Sawing, Boring & Chucking Machine, motor driven
Whitney No. 24—30" Motor Driven Ball Bearing Double Head Surfacer
Yates No. 177—30" M.D., B.B. Double Head Surfacer
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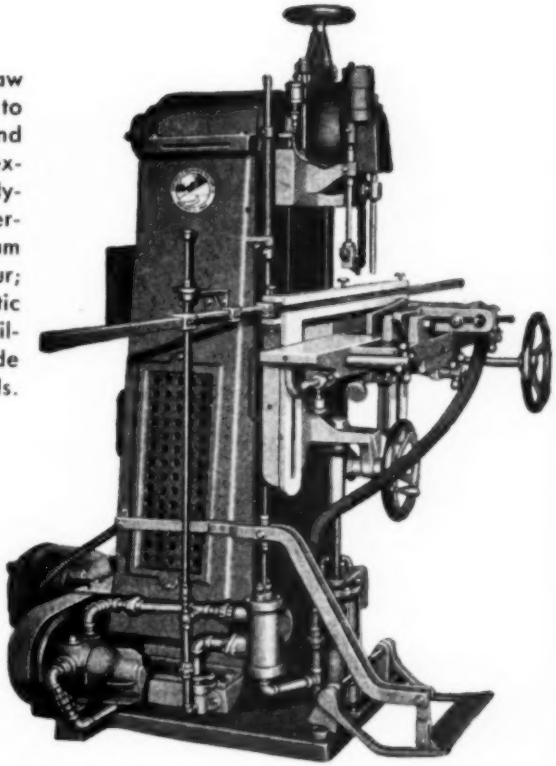

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$82.50

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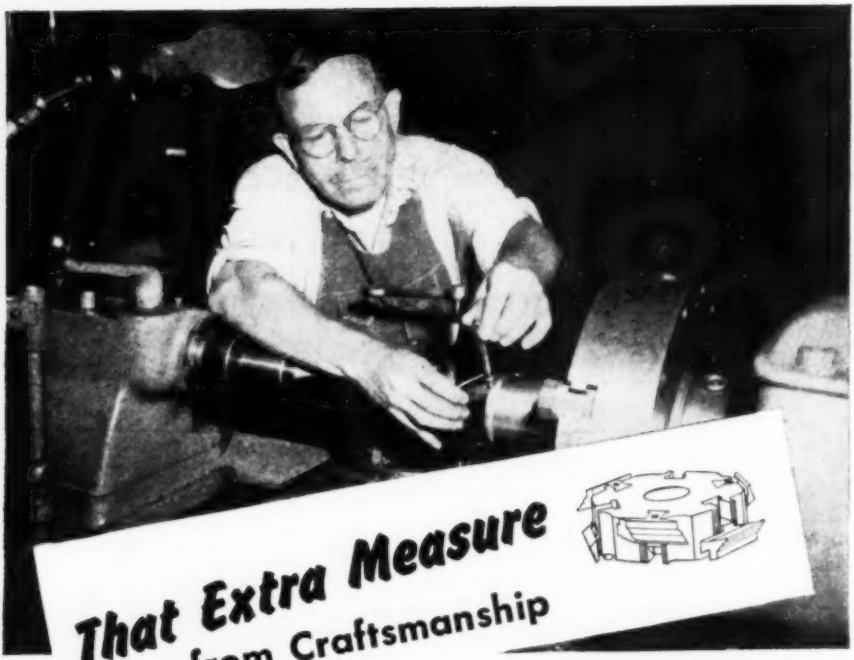

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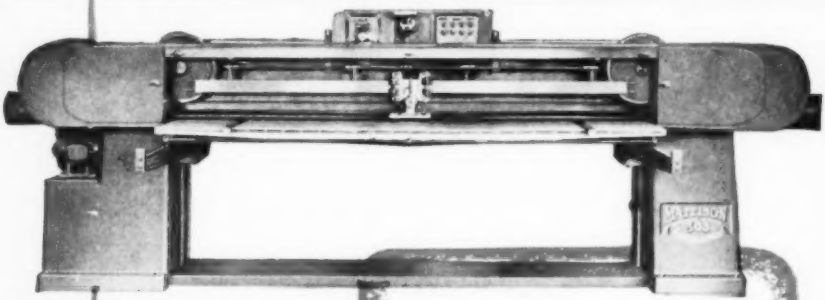
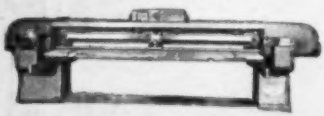
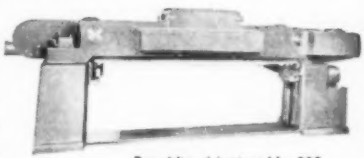


Front View Mattison No. 303
Automatic Stroke Sander — Single Belt



Mattison No. 303
Automatic Stroke Sander — Double Belt



Rear View Mattison No. 303
Automatic Stroke Sander Single Belt

● The Mattison No. 303 Automatic Stroke Sander is the last word in modern engineering. From the standpoint of design — construction — smoothness of operation and appearance, it is in a class by itself. Results that can be expected are faster output, better quality of work, and trouble free operation. These important features are all to your advantage. Hydraulic system for operation of shoe is simple yet positive in action, providing smooth operation of sanding shoe the entire length of stroke. Belt speeds to meet your needs. All controls are within easy reach of operator. The sand belt is completely enclosed at top and both ends for dust control and safety. Belts are easily and quickly changed. Aluminum sanding shoe is mounted on ball bearings for easy operation and control. Massive base and column construction provide solid foundation. The Mattison No .303 Automatic Stroke Sander is recommended as the most efficient method for finish sanding large, flat surfaces such as tops, panels, doors, etc. It provides perfect work on a real production basis. Double-belt model with coarse belt for removing tape and glue, and fine belt for finish sanding, speeds up production by reducing handling time and, in many cases, eliminates drum sander operation.

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